JPRS-ELS-87-015

25 MARCH 1987

Europe/Latin America Report

SCIENCE AND TECHNOLOGY

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

JPRS-ELS-87-015

25 MARCH 1987

EUROPE/LATIN AMERICA REPORT

SCIENCE AND TECHNOLOGY

CONTENTS

WEST EUROPE

EAST EUROPE

LATIN AMERICA

COMPUTERS

SCIENTIFIC AND INDUSTRIAL POLICY

/9987

BMFT SUBSIDIZES THIN FILM TECHNOLOGY RESEARCH

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 pp 9-10

[Text] As this year's Interkama (World Fair for Industrial Metrology and Control Engineering) in Duesseldorf proved, thin and thick film technologies, surface-mounted assembling, and hybrid integrated circuits constructed by use of these technologies are rapidly being introduced into modern sensor systems.

Conductors and passive components (such as resistors and capacitors) are applied in hybrid integrated circuits by, among other methods, printing or sputtering in thin layers onto laminates made of dielectric materials (for example, ceramic, plastic, enameled steel). Then, vased or uncased integrated circuits are added. The various combinations of different techniques chosen according to application or production quantities for construction of hybrid integrated circuits allow the creation of extremely compact circuitry, even when production quantities are relatively small.

When small- and medium-sized companies employ these technologies they are faced with two main problems, apart from financial difficulties: specialized training for their personnel, and choice of the most suitable technology for the application in question. Thanks to subsidies totaling DM8.3 million provided by the German Federal Ministry for Research and Technology [BMFT], two universities and two institutes of the Fraunhofer Society now offer support. In addition to special seminars, held in the institutes' own laboratories, they also offer individual advice regarding the choice of technologies and the installation of laboratories in the companies themselves.

The use of modern hybrid techniques in the development of modern, microelectronic-compatible sensors with miniaturized preliminary signal processing is being financially supported in accordance with indirect-specific subsidy measures launched in 1985 by the BMFT. For this purpose DM200 million are planned to be allocated. The plan is valid until the end of 1988. Applications may be submitted until 30 June 1987.

For information contact:

Thick film hybrid technology: Fraunhofer Institute for Solid State Technology (FhG-IFT) Prof Dr Reichl, Prof Dr Obermeier, Paul-Gerhardt Allee 40, 8000 Munich 60, tel: 089/70930

Ruhr University in Bochum, Chair for Electronic Circuits, Mez Bereich B, Hybrid Integrated Circuits, Prof Dr Klein, Prof D. Duddenhoefer Universitaetsstrasse 150, 4640 Bochum 1, tel: 0234/7003137

Thin-film technology: Fraunhofer Institute for Physical Measurement Engineering (FhG-IPM), Dr Wagner, Dr Dumbs, Heidenhofstrasse 8, 7800 Freiburg, tel: 0761/84081

Technical University in Hamburg-Harburg, Department of Semiconductor Technology, Prof Dr Mueller, Eissendorfer Strasse 38, 2100 Hamburg 90, tel: 040/771702780

Inquiries can be directed to the project contractor--VDI/VDE Technology Center Information Technology Gmbh, Budapest Strasse 40, 1000 Berlin 30, tel: 030/2609-153.

8701/12859
CSO: 3698/M079

NORWEGIAN SPACE CENTER ESTABLISHED

Oslo AFTENPOSTEN in Norwegian 28 Jan 87 p 3

[Article by Morten Malmø: "'Star War' About Space Center Assignment"]

[Text] Who will be the first board chairman of the Norwegian Space Center? Industry Minister Finn Kristensen must crack this "nut" in the near future. His own Undersecretary Kari Blegen is a strong candidate. So are other "star names" like Odd Gøthe, Finn Leid and Erik Tandberg. So far Kari Blegen is probably leading the competition for this prestigious chairmanship assignment.

It will be this year and next year that Norway will seriously take the first step into the space age. The Storting has said yes to Norway's becoming a full member of the European Space Agency (ESA), and Norwegian space involvement will take place via the Norwegian Space Center, which will come under the Industry Ministry.

The board of directors of the Norwegian Space Center will have seven members. Of these, NAVF [Norwegian General Scientific Research Council], NTNF [Norwegian Council for Scientific and Industrial Research], the Meteorological Institute/State Mapmaking Agency, the Telecommunications Agency, the Defense Ministry and the Norwegian Industry Federation will nominate one board member each. Then one additional person will be nominated by the Industry Ministry, which will also decide who will be board chairman. It has been indicated to AFTENPOSTEN that the board of directors must be appointed now, because important decisions must be made. According to what AFTENPOSTEN has learned, the decision will not be handed down before the Storting Industry Committee has visited ESA headquarters in Paris in the first half of February.

According to what AFTENPOSTEN has been told, four names are particularly topical for the board chairmanship of the Norwegian Space Center. They are Industry Ministry Ex-Negotations Director Odd Gøthe, Ex-Industry-Minister Finn Lied, space travel expert Erik Tandberg, and Undersecretary Kari Blegen. Lied led the work on the report on Norwegian space travel policy to the year 2000. Erik Tandberg was also on the Lied Committee. Tandberg is now Esso's information director, but will soon leave this post to become day-to-day head of Lohia Communication System A/S, a company which will work on electronic communications and satellite communications.

Undersecretaries

Kari Blegen is the first female undersecretary in the Industry Ministry. Before she came there, the 44-year-old was director of East European research at Gjøvik. She was educated as a university-trained engineer and has a doctor of engineering degree from NTH [Norwegian Technical College]. From 1977 to 1985 Kari Blegen worked for the Norwegian Scientific and Industrial Research Council, among other things, as information chief and as secretary for the so-called Thulin Committee, which at that time worked out the model for industrial technical research in Norway.

Prestige Assignment

The decision as to who will get the prestigious assignment will probably be made in February. Because space work is a new and exciting area of concentration in Norway, the chairman of the board of directors of the Norwegian Space Center will be a person in the media's limelight. The Industry Ministry's Storting report on Norwegian space work, which is now being discussed by the Storting Industry Committee, by the way, does not use the designation "chairman of the board," but the sexually neutral "board head."

8831
CSO: 3698/242

SPAIN LOOKS TO GREATER PARTICIPATION IN SPACE PROGRAMS

Madrid EL PAIS in Spanish 3 Dec 86 p 32

[Article by M. Ruiz de Elvira]

[Text] Madrid--A draft of a Spanish space program will be completed during the next few months, for the purpose of taking maximum advantage of Spain's membership in the European Space Agency (ESA) and establishing a base for research and development in space areas. One of ESA's most important programs, the Ariane rocket, will not be resumed until at least March 1987, according to a statement made yesterday in Bourdeaux (France) by the president of Arianespace, Frederic D'Allest.

The resumption of the Ariane launchings will be delayed a few weeks beyond the date initially set (February), declared D'Allest, during a press conference, according to a report from France Press. The Arianespace president explained that a specific date could not be given, but noted that considerable progress has been made in the redesign of the third stage of the rocket, which apparently failed in the unsuccessful launching of 31 May, causing the suspension of the launch program.

Next Friday, the commission for the space program, chaired by Jaime Sodupe, director of the Center for Technological and Industrial Development (CDTI) and Spain's new delegate to ESA, will hold its first meeting in Spain. This is the first commission of those called for in the science law promulgated this year.

According to Sodupe, the commission's goal during the first quarter of 1987 is to make a proposal for a Spanish national space program in conjunction with business firms and the scientific world, so as to bolster Spain's participation in the ESA projects. To date, the Spanish space activities, managed through the National Commission for Space Research (CONIE) and the National Institute of Aerospace Technology (INTA), subordinate to the Defense Ministry, have had financing of only 100 million pesetas per year.

Sodupe has replaced Gen Luis Azcarraga on the Spanish delegation to ESA, after a hiatus (from April to October) during which a void occurred because of the abolishment of CONIE as a result of the science law. According to Sodupe,

the transfer of authority from the Defense to the Industry Ministry has taken place quite normally, although the new team for the Spanish delegation has not yet been formed in its entirety.

Spain has no intention of keeping a permanent delegation at the ESA main headquarters in Paris, owing primarily to the variety of topics discussed at ESA, where up to 27 commissions for specific areas, ranging from telecommunications to microgravity or astrophysics, meet periodically. The Spanish delegation will rely on diplomatic personnel assigned to the French capital.

Ministers' Meeting

Next Monday, the meeting of a council of delegates has been planned, to study the holding of a meeting on the ministerial level for making major decisions concerning ESA, such as those relating to the Hermes (spacecraft) and Columbus (space platform) projects. The ministers will meet in July 1987 (the last meeting on this maximum level took place in January 1985).

In ESA, the efforts will be aimed, through CDTI, at increasing the number of Spanish business firms participating in ESA projects and raising the quality of the contracts procured. Sodupe explains that there is strong competition in the space field, which makes the participation of Spanish firms quite difficult. To date, the Spanish participation has reached only 3 percent, while in the case of the GNP, it would amount to at least 7 percent. With regard to specific programs, such as the Hermes and Columbus, it might total as much as 7 percent; but in the scientific program, of a compulsory nature, the participation is very slight; among other reasons because none of ESA's nerve centers are located in Spain. The industrial return does not amount to 80 percent; indicating that research is being financed in other more advanced countries.

2909
CSO: 3698/225

BAVARIA PROVIDES DM 84 MILLION TO SET UP DFVLR SPACE CENTER

Munich SUEDDEUTSCHE ZEITUNG in German 15 Jan 87 p 6

[Article by Rudolf Metzler: "Bavaria Presents Its Own Space Plans: A Space Center Is to Be Built in Oberpfaffenhofen for DM 84 Million"]

[Text] Oberpfaffenhofen, 14 Jan--Bavaria intends to finance "one of the biggest projects for the future," in the words of its Minister of Economics and Transport, Anton Jaumann (CSU), through the construction of an operational center for manned space flight in Oberpfaffenhofen, near Munich. For a sum of DM 84.4 million, a center for automation in space flight and a data center for space missions are to be added to the existing scientific facilities on the grounds of the German Research and Experimental Institute for Aerospace Studies (DFVLR).

Bavaria is prepared to make available half of the investment to be provided to Oberpfaffenhofen by the federal government--thus DM 42.2 million--in the form of a special financing arrangement, as adopted by the Land government at its last meeting in 1986. The precondition for this was that the federal government guarantee its share and that the Land government of North Rhine-Westphalia assume the DM 88.1 million investment for the Cologne-Porz facility. According to Jaumann, this has in the meantime been achieved, so that this Bavarian intiative "will not fall through for lack of money."

Jaumann foresees especially large-scale benefits for industrial policy resulting from the planned facilities, for which construction plans have already been drawn up. It is the Land government's idea that Bonn make Oberpfaffenhofen and the DFVLR center for astronaut training and zero gravity in Cologne-Porz available for use by the European Space Agency (ESA). Since the FRG already has an ESA operations center in Darmstadt, a second location financed by ESA would be practically out of the question. On the other hand, ESA regulations stipulate that the agency is obligated to make use of existing facilities in member countries.

The realization of the Bavarian space plans will depend largely on the next ESA board meeting this coming June. In particular the French, who play a leading role, will have a thing or two to say.

12271
CSO: 3698/252

BRIEFS

FEDERAL SPACE RESEARCH COMMITTEE--A majority of the Federal Committee for Research and Technology voted in favor of further development of the European launcher ARIANE and continuation of the European scientific-technical program for the definition phase of a European space shuttle. However, the representatives complained that the exact designs of the European projects have not yet been communicated to them. They expect to be informed about the available data in order to carry on with the group's work. The committee also agreed unanimously that space policy must not be pursued merely for research policy reasons. European and security policy decisions, which must be faced, are also at stake. [Text] [Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 443, 17 Nov 86 p 4] 8613/12851

CSO: 3698/M083

FRENCH INSTITUTE PRESENTS NEW BIOCHEMICAL SEPARATION PROCESS

Duesseldorf VDI NACHRICHTEN in German No 43, 24 Oct 86 p 44

[Article by Wolfgang Asche: "Separation With Preparatory Supercritical Fluid Chromatography: The Easy Way to the Bio Product"]

[Excerpts] Strasbourg, 24 Oct 86 (VDI-N)--Biotechnology in its practical application means, in particular, process technology. An important step in the end phase is the extraction of the product. Using preparatory supercritical fluid chromatography, products of biochemical processes can be quite readily separated.

At the annual meeting of processing engineers of the VDI Association for Process Technology and Chemical Engineering (GVC) in September in Strasbourg, a new method developed by the French ENSIC (National University for Chemical Industries) was presented for the easy extraction of the products of biochemical processes such as enzymatically produced pharmaceuticals. Prof M. Perrut and his colleagues J. Jusforgues and C. Berger reported on "preparatory supercritical fluid chromatography."

Depending on pressure and temperature values, a substance can be in a solid, liquid, or gaseous state. The gaseous state generated at high temperature and low pressure is characterized by the random movement of particles, provided there is sufficient space available. It is not a linguistic coincidence that the word "gas" is connected with chaos. With decreased temperatures, the substance becomes liquid and, finally, solid, with a high degree of order between particles.

Although in the pressure-volume-temperature (PVT) status diagram there is always a clear demarcation between the solid and the liquid state, the difference between the liquid and gaseous state becomes indistinct beyond the critical point. The density of the fluid can in fact be changed by changing temperature and pressure in the "supercritical area," but it will not condense.

As was reported at the annual GVC meeting, the working group led by Prof Perrut of ENSIC in Nancy has now used fluids such as carbon dioxide, fluoracarbons (frigenes), or light hydrocarbons like Pentan to perform separation operations. The mixture to be separated is applied to a column of 60-cm length and 60-mm internal diameter and is then pushed through by the supercritical fluid. The

column is filled with silica gel (silicon dioxide) particles with a hydrocarbon-like surface. The installation supports a maximum of 250 bar, while a microprocessor system provides process and safety control.

As they travel through the column, the components of the mixture are separated because of their different affinity to the filling. The components separated into fractions can then be collected at the foot of the column. The advantage of supercritical fluids in the mobile phase in chromatography is the simple and complete separation from the product: The fluid evaporates through decrease of density, that is, by pressure decrease and/or temperature increase.

Mobile phases with low critical temperature, like carbon dioxide (T crit. 31 degrees C), also allow easy separation of mixtures without thermal stress. As Prof Perrut emphasized during presentation of his apparatus in the "bioprocessing technology" section, this is an important asset in processes for the manufacture of temperature sensitive aromatic substances or pharmaceuticals. The evaporated fluid is first liquified by compression and then returned to the supercritical state, to be used again as a carrier for the preparatory supercritical fluid chromatography.

8617/12859
CSO: 3698/M078

FRG ORGANIZATIONS FORM GENETIC ENGINEERING WORKING GROUP

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 p 5

[Text] A "Working Group on Genetic Engineering" has been formed by the Technical University of Darmstadt, the Roehm and Merck companies in Darmstadt, and the Gruenenthal company in Aachen. The four partners, who describe their form of cooperation as unique in the FRG to date, want to develop genetic engineering projects ranging from the basic research all the way to the production stage of a new material, to jointly utilize expensive research equipment, and to exchange their special know-how. Half of the costs of the working group's research projects is paid by the Federal Ministry of Research and Technology, according to Prof Hans-Guenther Gassen, director of the Institute for Biochemistry at the Technical University of Darmstadt. All the projects of the working group, which has drawn up a cooperation contract, are to be ready for application by the companies within 3 years, if possible, and monitored by external evaluators.

In informal research cooperation the four partners have already developed a number of projects, including new drugs to prevent blood clots and inflammation, and for use in shock therapy. Among the first programs of the working group is the search for an enzyme to help pinpoint underlying cause of inflammations in patients and research at the Technical University of Darmstadt on factors to stop the growth of lung tumors.

Gassen stressed that the Darmstadt consortium will concentrate on applications-oriented research, in contrast to other genetic centers. Right from the start, the working group intends to develop all methods autonomously and not to fall back on previous developments from the United States.

8617/12859
CSO: 3698/M070

FINNAIR DELAYING DECISION BETWEEN MD-11, A-340

Helsinki UUSI SUOMI in Finnish 28 Jan 87 p 37

[Article by Jukka Knuuti: "Finnair Purchase Decision Impending: Production of DC-10's Successor Ensured"]

[Text] The replacement for Finnair's DC-10 planes will probably be the MD-11, which is designed by the same manufacturer, and is based on the DC-10. The decision to manufacture a new model, which was uncertain for a long time, has been made, and Finnair has conducted negotiations on procuring the aircraft with the manufacturer, the American company McDonnell Douglas.

The INTERNATIONAL HERALD TRIBUNE ran an ad from McDonnell a few weeks ago in which the 12 airlines that have ordered the new aircraft were listed. As a continuation of the list there was an empty space that read: "not announced."

General Manager Gunnar Korhonen says that Finnair is one of the companies described are covered by the empty space. The company has negotiated for itself advantageous conditions for procuring the model if the sale is made before spring. He says that Finnair is nevertheless studying the situation for the time being.

Moment of Truth for the Airbus

By studying the situation Korhonen probably means the speed with which McDonnell Douglas is obtaining orders for its new model and how the corresponding model A340 planned by the Airbus succeeds.

McDonnell Douglas announced some time ago that the MD-11 aircraft would be manufactured if 20 orders for it were received. There are now 52 orders and 40 reservations, on the basis of which a decision to manufacture the model has been made.

It is most noteworthy that among the 12 purchasers is British Caledonian. According to observers Airbus would have had the possibility to block this purchase of an American plane, because the British Government is expected to pay about three billion of the more than 15 billions in support that the production of new Airbus models A330 and A340 requires. The A340 would correspond approximately to the MD-11, and the A330 would be intended for shorter routes.

The manufacture of two new aircraft models was intended to save through the fact that about 80 per cent of their components would be common.

The success of the MD-11 piles rocks on the Airbus runway in two ways. In the first place each order for McDonnell reduces Airbus sales opportunities. In addition the success of the MD-11 cuts the ground from under the financing of new Airbus models.

Support is being sought from the governments of France, West Germany, England and Spain, which are behind the Airbus consortium, so that it would be possible to prevent the world's largest airaircraftmanufacturer Boeing from obtaining a monopoly position in the sphere of large-body passenger aircraft. If the MD-11 would block the emergence of a monopoly, the billions in support would no longer be regarded as sensible.

The MD-11 Sooner and Cheaper
Because the MD-11 is largely based on solutions of the DC-10 its construction is cheaper than that of the totally new Airbuses. In addition McDonnell will be able to deliver the first planes to customers already in 1990, or before the prototype of the European competitor even makes it into the air.

To a layman's eye the MD-11 looks quite a bit like the familiar DC-10 Depending on the configuration, it will be able to carry 250-400 passengers as far as 13,000 kilometers to their destination.

PHOTO CAPTION

The MD-11 is displacing the DC-10 in the Douglas assembly halls. The difference is not large, however, since the 11 is based on the 10's solutions.

12893
CSO:3698/263

NORSK DATA OFFERS NEW COMPUTER, GAINS ON EUROPEAN MARKETS

Series 5000: Double Performance, Half Price

Oslo AFTENPOSTEN in Norwegian 28 Jan 87 p 48

[Article by Ulf Peter Hellstrøm: "Norsk Data's Flagship"]

[Text] "Norsk Data must be in front in the computer industry, and our new powerful computers are future-directed products which will enable us to do this," Norsk Data Director Roy Jensen said when the computer company introduced a new generation of computer equipment yesterday. The computers of the 5000 series will be Norsk Data's new flagships in the years to come.

Technology's festive moment took place at Norsk Data's Norwegian operations headquarters in Furuset. There was talk of millions of instructions per second, operating systems, compilers and parallel processors. The main message was that Norsk Data's new computers are at the top of the world as far as the application of this type of technology is concerned.

Have the Jump on Others

The most powerful model of the new computer series has a performance of 24 million to 28 million instructions per second, Norsk Data reports. According to the competition-conscious company's own calculations, this puts Norsk Data a good bit ahead of comparable products from the most important American competitors, which are IBM, Digital Equipment Corporation, Prime, Data General and Wang. The price of the new models varies from a good 2 million to a good 10 million kroner.

Two Hundred Terminals

Norsk Data's computers have traditionally cost from a few hundred thousand to a couple of million kroner. The company's new products are accordingly quite a bit more expensive than earlier generations. But the company itself emphasizes that the new offerings have a totally different capacity than earlier generations. The biggest model can serve about 100 terminals at the same time, and in practice this means that at many places of work up to 200 terminals can be connected to such a computer, says Marketing Director Bjørn

Boberg. The new generation offers at least double the performance at largely speaking half the price, according to the company.

Tightly Packed Design

Norsk Data's new computers have been given a completely new architecture which is based on CMOS technology, where the tiny integrated circuits can function even with low power consumption. This technology accordingly offers opportunities for a very tightly packed design, so that calculators are shrunk down to a couple of circuit cards.

The central processing unit is actually on a single card, whereas the central processing unit in today's ND computers consists of a total of 21 circuit cards. The signals in the 5000 series computers will have a shorter path to travel, and will consequently be much faster than before.

"The computer uses up 70 nanoseconds per instruction, so that the number of instructions per second now is just as great as the number of seconds in a year," says Project Leader Otto Stabenfeldt. Although the new computers are of a different caliber than earlier generations, existing software for today's computers can also be used in the new heavy-weight class.

"Our new computers will be able to handle the ever increasing demand for exacting applications for computer equipment. In addition, we placed emphasis on developing a generation of computers which not only offer big performance, but also low production costs," Director Roy Jensen says. The computer utility requirement is increasing by 30 to 50 percent per year, he believes.

"We are seeing a trend where increasingly more customers are using software which requires greater data capacity from arithmetic-and-logic units. This distinct turn toward more-processor-demanding tasks has made it necessary to offer greater-capacity equipment. This is at the same time a guarantee that Norsk Data will still be one of the world's leading computer companies in this share of the market," Jensen says.

Strong Growth in UK, Danish Sales

Oslo AFTENPOSTEN in Norwegian 30 Jan 87 p 3

[Article by Ulf Peter Hellstrøm: "Market Shares Increasing: Norsk Data Getting Bigger in Europe"]

[Text] Strong growth in Europe's big computer markets last year contributed to a decisive degree to the fact that Norsk Data once again achieved growth in net profits and earnings. "We took big market shares in all our foreign markets, and we must continue to do so," said Marketing Director Asmund Sløgedal of the firm's management when the results were presented yesterday. Norsk Data saw the strongest growth in Great Britain and Denmark.

Norsk Data continued its strong growth last year, although economic developments in Norway resulted in the fact that the computer industry as such experienced some stagnation in demand. Norsk Data increased its business in

Norway by 29 percent, to about 1.3 billion kroner worth. This means that about half of its business still comes from sales in Norway.

The earnings per share of 12.5 kroner are approximately in line with several financial analysts' earlier estimates. The operating margin last year was 15.8 percent, which is 1.2 percent lower than the record year of 1985. But the margins show that Norsk Data is still completely in the running in the international computer industry. Compared with its most important competitors -like Digital Equipment Corporation, Prime, Wang and Data General--the Norwegian company is still a bit ahead.

The company's net capital increased by about 35 percent to 2.05 billion kroner. The influx of orders increased by 29 percent to about 2.6 billion kroner worth. The influx of orders for computers and accessories increased by 20 percent. Norsk Data hired about 800 people last year, so that the concern employed 3618 people at the turn of the year.

Sløgedal says that the number of new employees this year will stay well under 500.

Business abroad increased by 46 percent. Sales doubled in Great Britain, while sales increased by 70 percent in Denmark and 40 percent in Sweden and West Germany, respectively. The operations of the 450-man organization in West Germany have now almost balanced off, while Sweden this year could prove to become one of Norsk Data's most expanding markets. The investment urge is great in Swedish industry at present. The joint venture with Matra in France is discussed in very positive terms by Norsk Data's management. Operations in the USA are at present producing net profits of about 80 million [kroner], but this is before the partnership agreement with the American Mycro-Tek graphics company. Sales in the Far East are producing net profits on the order of 100 million.

Board Chairman Terje Mikalsen emphasizes that the strong growth in ND Comtrec--which supplies systems for the graphics industry--has encouraged the entire concern to become even more oriented toward those who will ultimately use Norsk Data's data systems.

8831
CSO: 3698/242

FRG DATA PROCESSING GROUP PLANS COMPUTER RESEARCH NETWORK

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 443, 17 Nov 86 pp 7, 8

[Text] The board of the Society for Mathematics and Data Processing (GMD) has approved a framework program for the years 1986-1990. For this "Scenario '90," a total of DM169.9 million has been allocated, including DM70 million for investments, DM48 million for leasing of new computer systems, and the remainder for software (DM17 million) and resultant costs (DM34 million).

During the planning period, 850 work-station systems and 10 laboratory computers with different capabilities and functions are scheduled for purchase. These instruments are used, for example, in planning and design of computer architectures (supercomputer) and programs (software technology), for the design and testing of highly integrated circuits (chip design), and the design of knowledge-based tools for various applications.

The individual cost of work station systems ranges from DM30,000 to DM350,000, depending on the equipment, and between DM500,000 and DM800,000 per system for laboratory computers (superminis).

The establishment of an experimental laboratory and test center is planned to perform tasks related to supercomputer science. It will be part of the High Performance Computer Center for Computer-Aided Theoretical Physics and Supercomputer Science now under development. In addition to the GMD, the large-scale research institutes, the German Electronic Synchrotron (DESY) and the Juelich Nuclear Research Facility, are participating. The GMD plans a total investment from DM16 to DM20 million as its contribution.

Additional laboratory equipment at a total cost of approximately DM10 million is planned to be made available for the following projects:

--EIS (design of integrated circuits): Chip prototypes developed at universities within the framework of this large-scale project will be tested in this laboratory;

--Man-machine interface: Through observation and experiments on the computer, constructive conclusions are to be drawn here to make the operation and servicing of computers as simple as that of telephones and TV sets even for non-experts;

--Video conferencing: Here, the existing conferencing services of the German Bundespost, which give conference partners in different places the capability of holding discussions as though they were in the same room, will be supplemented and expanded. The video conferencing laboratory is to integrate computers and their applications into conferences on an experimental basis in order to test new forms of support and to establish them scientifically.

All equipment (work-station computers, existing mainframe computers, new laboratory systems) are to be connected through four ISDN compatible PABX's in the four GMD centers with interfaces to the existing local high speed networks. This will take advantage of the 64 Kb/sec and 2 Mb/sec services within the integrated services digital network (ISDN) of the German Bundespost both for interconnection between the GMD centers and for all information services (language, text, video, data, etc.). The cost is approximately DM5 million.

In order to use all this equipment for a complete infrastructure within the GMD, development expenditures must be made in 3 areas:

--The systems must be integrated into the local working environment through appropriate software and hardware configurations, as well as user support.

--The systems must be adapted to the optimal communications standards in each specific environment and be linked to each other by means of the ISO [International Organization for Standardization] - "Open Systems Interconnection" protocol standard.

--Standard interconnection services among all computers and external GMD partners must be made available on the basis of the standards defined for the German Research Network (DFN) (dialog, file transfer, electronic mail).

Implementation of this infrastructure, which is supposed to support research, simultaneously requires prototype solutions of its own which, in turn, require research efforts.

A further goal of the GMD is to test problem statements and solutions through experiments and pilot applications in close cooperation with industrial research and users in industry and trade, as well as public organizations. The infrastructure thus offers its partners in industry, trade, and science a field for exacting tests and experiments in specific areas.

8617/12851
CSO: 3698/M093

SPAIN'S MARKET FOR COMPUTERS ANALYZED

Madrid DIARIO 16 in Spanish 28 Dec 86 p 16

[Text] Madrid--The average annual increase in the number of computers installed in Spain has been 36 percent during the past 2 years, according to a report from the General Directorate of Electronics and Computer Science. The study notes that this figure proves that the market is far from saturation. The total value of the equipment exceeds 356 billion pesetas.

According to a survey made by the Ministry of Industry and Energy, the number of computers installed in Spain as of 31 December 1985 was 49,362. The ministry report, which relates to equipment with a unit cost exceeding 1 million pesetas, also stresses that the average annual increase in equipment between 1983 and 1985 was over 36 percent, "proving that the computer market is far from saturation."

The greatest increase (during that same period) occurred in small management systems, which rose from an installed supply of 19,227 machines to 38,121, showing an increment of 40.8 percent. The figure for conventional minicomputers rose 20.5 percent, moving from 4,137 to 6,005 machines.

Nevertheless, the report from the General Directorate of Electronics and Computer Science points out that the value of the supply of computers installed in Spain has increased in a lesser proportion, amounting to only 7 percent on the average.

Similarly, in the area of "large computers," the value of the equipment has declined; something which, according to the study, had already occurred between 1981 and 1983. On the other hand, the value of the supply of small management systems increased more than 21 percent.

Rise in Value

As of 31 December 1985, the value of the combined computers installed in Spain was 356.544 billion pesetas; whereas it had been 255.218 billion pesetas in 1983. Nevertheless, in 1983 pesetas, the value of the equipment at the end of last year was 292.366 billion, and hence the average annual increase, without counting inflation, has been only 7 percent.

Despite its slow growth, the supply of "large computers" was worth 177.789 billion pesetas at the end of last year; whereas that of the small management systems was 137.023 billion pesetas.

With regard to the age of the computer equipment, the data from the General Directorate of Electronics and Computer Science, which are not complete, indicate that 31.8 percent of the computers were installed prior to 1982; 15.5 percent were installed in 1982; 15.6 percent, in 1983; 16.7 percent, in 1984; and 0.4 percent, in 1985.

The report emphasizes that, therefore, the portion of the supply (31.8 percent) that is over 5 years old is still large.

In all types of computers, American technology remains the leader with regard to the data processing equipment installed in Spain. For example, 42.7 percent of the computer equipment has technology of American origin. The report points out that the technological presence of the Federal Republic of Germany is quite notable, with 15.4 percent of the total, "a figure obviously far higher than that for France."

It adds: "Nevertheless, this information is based on the number of machines, and not on their size. Although the FRG supplies Spain with much small and medium sized equipment, France supplies less equipment, but of larger size, of greater value, and of more technological complexity."

Italy is the third-ranking technological supplier to Spain, with 13.6 percent of the total equipment installed, followed by the Netherlands, Canada, and Japan.

The figures change when the origin of the equipment's manufacture is involved. Italy ranks first, with a total of 12,716 computers installed, representing 27.1 percent of the total. Next comes West Germany, with 25.8 percent; and Spain, with 17.1 percent.

The United States ranks fourth, with 4,552 computers, and 9.7 percent of the total.

On the other hand, with regard to the value of the equipment based on country of origin, the Federal Republic is in first place, with a total of 73.848 billion pesetas; followed by France, whose combined supply of computers installed in Spain has a value of 68.591 billion pesetas.

Other data provided by the report from the General Directorate of Electronics and Computer Science involves the large concentration of computers in Madrid, Barcelona, and Valencia, which have 23.1, 20.3, and 6.7 percent of the equipment, respectively, amounting to over half the total.

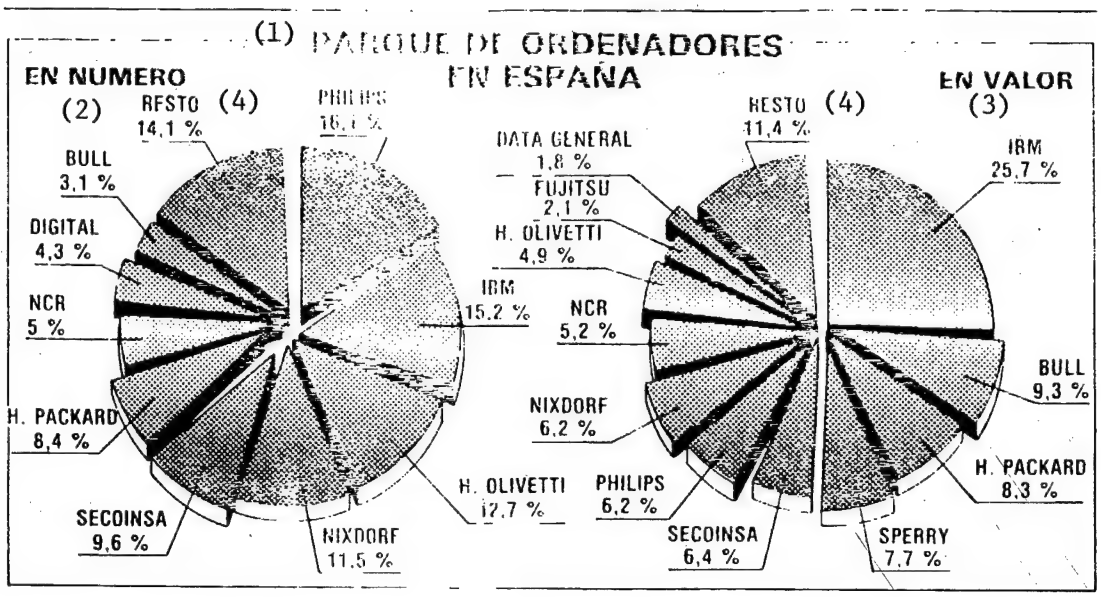
Sectors

The distribution of computers is also unequal in relation to the production sectors. The banks, financial and insurance institutions, and real estate activities have over 30 percent of the total installed equipment.

Next in rank are metallurgy, and the electronic, automobile, and shipbuilding industries, with 13.5 percent. That same percentage pertains to public administration, national defense, social security, and education.

Based on companies, IBM leads, with 25.7 percent of the supply of installed computers in Spain, with regard to value; followed at a considerable distance by Bull, with 9.3 percent of the total, and Packard, with 8.3 percent.

With respect to number, first place is held by Phillips, which controls 16.1 percent; followed by IBM, with 15.2 percent; and Hispano Olivetti, with 12.7 percent. Nixdorf has 11.5 percent of the total supply of computers installed in Spain.



Key to Chart:

1. Supply of Computers in Spain
2. In number
3. In value
4. Rest

2909
CSO: 3698/225

DORNIER REPORTS PROGRESS IN X-SAR SENSOR PROJECT

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 pp 13-14

[Text] The design study of the X-SAR scientific sensor system has been successfully concluded at Dornier System GmbH in Friedrichshafen. In a meeting lasting several days the required developmental status report on the X-SAR sensor system was presented to representatives of the BMFT (Federal Ministry for Research and Technology) and the DFVLR (German Research and Experimental Institute for Aeronautics and Astronautics), the project contractor, as well as to experts of several Italian and American partners in the program by the participating companies, Dornier System, Selenia Spazio, and Contraves Italiana.

SAR-sensors are radar imaging systems which can deliver high resolution images of the earth's surface from aircraft, space shuttles, or earth orbiting satellites. The special interest in this new kind of image sensor is generated, in particular, by the fact that image quality is not influenced by clouds or mist or by light conditions on the ground. The X-SAR project, part of a cooperative program with NASA and the U.S. Jet Propulsion Laboratory (JPL) within the framework of the so-called Shuttle Imaging Radar Program (SIR-C), is subsidized by the BMFT to encourage further research into this technology.

The first flight of the X-SAR is planned for the beginning of 1990 and represents a very important milestone for the development and construction of future remote microwave surveillance systems. During a second flight, planned for the same year, radar images will be taken, in which seasonal data will be reported. This is expected to lend significant momentum to development of reference data in view of future possible applications. The frequencies selected for SIR-C in connection with several polarizations will permit unique return signals from surface structures, vegetation, soil moisture content, and other factors that are important for large area examinations.

8617/12859
CSO: 3698/M068

EFFECTS OF FRG MICROELECTRONICS SUBSIDY PROGRAM ANALYZED

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 443, 17 Nov 86 p 7

[Article under the "Research" rubric: "Microelectronics Special Program: Results of Effects Analysis"]

[Excerpt] Between 1982 and 1984, with a total of DM450 million, the German minister of research and technology [BMFT] financed 2,430 product developments in 1,740 firms as part of the special program "Application of Microelectronics." The indirect-specific subsidy method was employed for the first time in order to facilitate access for small and medium-sized firms; this method is remarkable since the application procedures and transactions involve little bureaucracy. The effects of the special program have been analyzed by the Institute for Urban Planning and Structural Policies in Berlin, and the Peter Toepfer Planning and Consultation Company, both commissioned by the BMFT. For this analysis, 250 subsidized firms chosen for a random survey were interviewed and the results examined.

Overall, the analysis revealed the following result: During a period when future scientific development was uncertain, the special program substantially enhanced microelectronics by speeding up its broad application in products, above all in capital goods. As planned, the program also improved competitiveness, particularly with regard to medium-sized firms engaged in machine and equipment construction, measurement and control engineering, and electrical engineering.

Eighty percent of the subsidized firms had fewer than 500 employees and therefore belonged to the small- and medium-sized company category. Ninety-five percent had turnover amounting to less than DM200 million, and 25 percent of the companies applied microelectronics to their products for the first time thanks to the special program. Forty percent of the projects had completely new developments as their objective, and 88 percent of the financed projects were technically successful.

Thanks to these successful developments, two-thirds of the firms have already made new investments in production, and almost half have employed more workers. It is believed that market expansion and increased sales will lead to further employment increases.

The most important reasons for the firms' positive response to these measures are that the subsidies achieved the following results within the companies:

--allowed structural changes or increases in personnel in the research and development sector (38 percent),

--increased the financial base for research and development activities (30 percent),

--facilitated protection of the firm's existence, or the establishment of the company (16 percent).

As far as the market is concerned, the special program has been particularly successful in:

--increasing the range of products (22 percent),

--improving the quality of products (22 percent),

--clearly increasing sales (13 percent).

8701/9604
CSO: 3698/M099

FRENCH INDUSTRY PRAISES ESPRIT, WORRIES OVER FUNDING

Paris LE MONDE in French 19 Dec 86 p 31

[Article by Eric Le Boucher]

[Text] Will the dream of an advanced technology Europe die a-borning? Key figures in French industry fear that is what lies ahead. They worry about the reluctance to make tough policy decisions as to the future of the EC's research programs. Radically split, the research ministers of the Twelve failed again to reach agreement at their most recent (9 December) meeting on the Commission's proposed basic program: 7.7 billion ECU earmarked for 1987-1991, or 52 billion francs spread over 5 years. The next meeting is slated for the 22nd, but the opposition in the three great "liberal" countries—Federal Republic of Germany, Great Britain, and France—seems to have subsided. Bonn, London, and Paris report "inflated costs for research programs which are not always implemented," an excess of "bureaucratization" in procedures, and "inadequate access" for small and medium industry (PMI), and call for cutting back loans to 4 or 5 billion ECU.

Leaders of French industry, great and small, challenge those arguments, citing the exemplary record of the Esprit program launched in Brussels in 1983 on microelectronics and computer science. Neither bureaucratic—it was industry people themselves who selected the research topics—nor confined to big corporations—more than 40 percent of the loans went to PMEs [small and medium businesses]—Esprit gets good marks from all quarters.

"The program has played a major catalytic role," says Emmanuel de Robien, who heads the computer sciences group at Bull. "The obligation to engage jointly in research has allowed us to get together, to get to know each other. The productive input from researchers and companies from different countries has been very beneficial." The same opinion comes from Pierre Aigrain, former minister for research and adviser to the president of Thomson: "We work a lot better when we work in groups." And, to cite an example that involved Britain's Plessey and Germany's ABG: "We were interested in research into the "planarization" of integrated circuits needed for connections between very small circuits. the means to handle both. We were able to share the work with our partners. Had we not done so, it would have meant leaving the field to the Americans and the Japanese."

"We were also able to meet with other high-performance PME's and researchers from universities, because Esprit involved both faculties and public agencies," Robien went on. "Strange as it may seem, our scientists often know their American colleagues or even their Japanese opposite numbers better than we know each other. Thanks to Esprit, we have had some very pleasant surprises, such, for example, as the astonishing qualities of a small university, such as Heraklion in Crete. Looking at it, all in all, we can say that at last the advanced technology community has found a voice, thanks to Esprit. We all know what all our colleagues are doing, we seek out the most promising specialties, and we talk about them." So does Bull, which has hired 140 research people to work on some 30 of its projects, reckoning that it benefits by the work of 400 scientists. "The multiplication effect at Thomson is a factor of 3 or 4," reckons Pierre Lepetit, director for technological cooperation at Thomson, an outfit that has a hand in some 50 projects.

"We Never Spend Enough"

Somewhat shy at first, Cap Gemini Sogeti (a computer services company) also underscores the benefits: "Our company has no truck with government loans. Esprit at first looked to us like just another gadget," says CEO Bernard Lorimy, But, in the event, it has proved very profitable, especially in the fringe benefits. Besides, while it is difficult to cooperate with the French, our immediate competitors, things go a lot more smoothly with the Europeans."

Of the 240 industrial companies participating in Esprit, 130 have fewer than 500 people on their payrolls. "For us, Esprit is a cachet," says Francois Simon, Chairman of the Board at CRIL (Industrial Design and Production of Computer Logic Systems), which has 110 people on its payroll. At first, CRIL was shy about trying to join the big boys. Then Bull came to seek it out, pressing it to join: "A lot of people come to see us. The Esprit blazon let us find customers in the United States, and even in Japan," says Francois Simon. Should a PME really get into research, even before it is ready to compete in the open market? (1). "Of course it should. In computer science, even the PME's [small and medium-size businesses] have to look 5 to 7 years down the line."

The praises are not half-hearted: "True, some of the new programs submitted to the Commission are overweight," says Lorimy. "We shall certainly have to trim them back a little, The truth is, though, that in high technology, up against the Japanese and the Americans, we never spend enough money." There you have the heart of the matter. The basic program provided a mere 2.5 percent of the EEC budget for 1968, and will not top 4 percent in 1991, as opposed to some 65 percent for the common agriculture and fisheries policy. No doubt there are always "sound" budgetary reasons for keeping the lid on loans. Industry people, though, are hoping to stop the politicians—either because that is the easy way or out of patronage commitments—from cheese-paring on the future and on a European initiative that—one swallow doth not a summer make—is working, and working well.

FOOTNOTES

The Esprit programs lie somewhere between basic research and product development in what is called "pre-competitive" research. The loans are shared 50/50 between the EEC and industries, which are required to form associations with several partners from different countries. Such loans granted by Brussels since 1983 came to a total of 630 million ECUs.

6182

CSO: 3698/247

EUREKA INFORMATION, GUIDELINES OF JUNE 1986 LONDON CONFERENCE

London PROCEDURES FOR EUREKA PROJECTS in English 21 May 86 pp 1-10

[Text]

I Introduction

1. The Declaration of Principles adopted at the Hanover Ministerial Conference on 6 November 1985 established the framework within which EUREKA will go forward.

2. This note outlines procedures, in the light of the Declaration, for:

(i) the circulation of information about proposals for EUREKA projects;

(ii) the acquisition of EUREKA project status;

(iii) the notification of EUREKA projects;

(iv) discussion of "additional measures" in the EUREKA framework.

3. These procedures are for the guidance of EUREKA members. They will be subject to review in the light of experience. In the meantime, a degree of flexibility may be necessary in

relation to certain types of project or project proposal (for example, infrastructure projects).

II Information about areas of technological interest and proposals for EUREKA projects

4. In accordance with the Hanover Declaration, Governments (and where appropriate the European Commission) will circulate information in the EUREKA framework on proposals for EUREKA projects, or on areas of technological interest which may lead to such proposals.

5. The object of circulating this information will be to enable enterprises or institutes wishing to participate in a potential project to indicate their interest in doing so. The minimum information, to be exchanged at the earliest possible stage in the development of a proposed project, will be:

(i) the description of the proposed project - objectives, financial resources needed and timescale - and of the technological area of interest;

(ii) the name and address of the participant acting as contact point for EUREKA purposes (the "contact participant");

(iii) the names of other participants;

(iv) where appropriate, the relationship of the project to any existing technological co-operation programmes.

A framework for the presentation of this information is attached at Annex A - Sections 2 to 8.

6. The information will be sent to the Secretariat by the Government of the participant acting as contact point for EUREKA purposes, or where appropriate by the European Commission. The Secretariat will circulate it to each High Level Representative, who will then be responsible for its distribution within his own country/institution.

7. Enterprises or institutes wishing to participate in a proposed project will approach the participant acting as contact point for EUREKA purposes. Final decisions on such approaches will be a matter for the participants concerned.
The Secretariat will maintain a database of the information received in accordance with paras 5 and 6 above.

III EUREKA project status

9. A project will not acquire EUREKA status until a minimum of 45 days has elapsed following circulation by the Secretariat of the information specified in para 5 (i)-(iv) above.

10. The Secretariat will warn Governments of participants in a project if the information they have provided is inadequate as a basis for the operation of the 45 day minimum period.

11. Projects about which information is circulated for the purposes of compliance with the 45 day rule must involve participants from at least 2 EUREKA countries, whose Governments must have agreed to circulation of the information.

12. In accordance with the Declaration of Principles, the acquisition of EUREKA status by a project is a matter for the Governments of enterprises or institutes participating in the

project (and where appropriate for the European Commission/ Community). These authorities will satisfy themselves that the project concerned complies with the objectives and criteria set out in the Declaration; and that

(i) the project is the subject of a formal agreement between the participants on financing, technological content, and timescale; and, if appropriate, on the ownership of industrial property rights, marketing and any "additional measures" sought from Governments or other competent bodies;

(ii) the relationship, if any, of the project to other European technological co-operation programmes has been identified; and

(iii) development work will be carried out in EUREKA countries, and its results will be exploited to the benefit of EUREKA countries.

IV Notification of EUREKA projects

13. In accordance with the Hanover Declaration the Governments of countries of participants in an agreed project (or where appropriate, the European Commission) will jointly notify the project concerned to the Ministerial Conference through the High Level Group. The EUREKA project initiation phase is formally completed when the project is reported to and noted by the Ministerial Conference, which will announce the projects notified to it.

14. The procedure for notification will be as follows:

(i) a framework for presentation of the necessary information is attached at Annex A. Full information will be provided on the matters covered by Part I and, if appropriate, Part II. If appropriate, additional information may be provided on the matters raised in Part III;

(ii) the information will be transmitted to the Secretariat at the earliest possible stage;

(iii) the Secretariat will distribute the information to each High Level Representative; and will maintain a central database of information on all projects reported to it;

(iv) information on projects will be periodically updated by means of brief progress reports. These will be made annually (or more frequently if appropriate) and in accordance with the procedures outlined at (i)-(iii) above; and

(v) the Ministerial Conference will be notified at the earliest available opportunity of projects reported in accordance with (i)-(iii) above.

15. A EUREKA Government, or the European Commission, may seek discussion of a project or proposal if it considers that questions arise (for example, "additional measures" proposed by Governments concerned) which merit discussion by the High Level Group as a whole. Such discussion will not call into question the attribution of EUREKA status to the project or proposal. Details of the matters to be raised should be notified to the Secretariat in advance for circulation to other High Representatives before the meeting.

16. Following discussion in the High Level Group, any Government or the Commission may raise the matter if necessary at the next Ministerial Conference.

V "Additional measures"

17. Under the procedures outlined in paras 14-16 above, information will be provided, where appropriate, about "additional measures" which it is proposed should be taken for the benefit of EUREKA projects. In accordance with the Hanover Declaration, these measures may be discussed in the High Level Group at the request of any EUREKA country or of the European Commission.

18. Concrete proposals for additional measures within the scope of Part III of the Hanover Declaration may also arise from discussions in industrial and other fora involving European business, and may also be considered by the High Level Group at the request of any member of EUREKA.

19. Where additional measures would involve market-opening action (for example, on standards, technical barriers to trade, or public purchasing), they may fall within the competence of other bodies, including the European Community and the bodies responsible for implementing the Luxembourg Declaration. Discussions in the EUREKA framework will respect the competences of the bodies concerned which will take decisions on any proposed measures in accordance with their normal procedures.

20. EUREKA discussions will aim:

(i) to establish the nature of the problem in respect of which additional measures are proposed, and to clarify possible means of tackling it within an appropriate time frame;

(ii) to identify the body or bodies primarily responsible for action on the problem and for decisions on priorities for action; and

(iii) (where appropriate) to invite the responsible body or bodies to consider the scope for action and to report back.

21. Where such invitations are issued the High Level Group will review progress on the basis of a report from the responsible body at the earliest practicable date. Further progress reports will be made at least every 12 months, and wherever possible every 6 months.

22. The responsible bodies may be EUREKA Governments, the European Community/Commission and/or the bodies responsible for implementing the Luxembourg Declaration. Where the responsible body is not represented on the Group, an appropriate member of the Group will be invited to raise the matter with it and to report back on the lines envisaged above.

23. The High Level Group will report to the Ministerial Conference on progress in relation to the "General Conditions" outlined in Part III of the Hanover Declaration.

24. While respecting the competence of other bodies, EUREKA members will seek to support one another in stimulating action on additional measures in such bodies.

25. Any market action taken in the light of EUREKA discussions will be consistent with relevant international obligations as well as with European Community law.

EUREKA PROJECT/PROPOSAL
(delete where not applicable)

PART I : PROJECT INFORMATION

1. Project title

2. Project description or technological area of interest

In the case of expressions of interest at an early stage, a specific project may not yet be envisaged. If this is the case, the technological area of interest should be identified.

3. Participants:

Name of enterprise/institute or other body acting as contact point for EUREKA purposes to be underlined. Country of location for all participants to be specified.

4. Contact(s)

Should include name and address of participant acting as contact point for EUREKA purposes.

5. Estimated costs

Where appropriate, for definition phase and full project.

6. Timescale

Where appropriate, broken down into phases (e.g. definition phase, completion of project, date product/process/service on market).

7. Technological developments envisaged

Description of technological objectives and how these differ from, and improve on, existing products/processes/services.

8. Relationship to other European technological co-operation programmes

Should state whether any relationship exists or should exist, with Community or other European technological co-operation programmes.

9. Financial or other contribution of each participant to project

Should specify each participant's share in the project.

10. Relevant qualifications of participants

11. Status of agreement between participants

Should state whether Memorandum of Understanding or other formal agreement exists; what conditions, if any, are attached.

PART II : ADDITIONAL MEASURES REQUESTED

12. Additional measures requested

Should specify what type of measure and timescale are requested, e.g. agreement on common standard.

13. Competent authorities

Competent authorities for the requested measure(s) differentiating between measures by Governments of countries of participants and measures involving others (third parties).

14. Authorities responsible for progress report to High Level Group

PART III : OPTIONAL SUPPLEMENTARY INFORMATION

15. Application/market

Should specify the international market at which the product, process or service is aimed.

16. Location of development work

17. Where and by whom is development to be exploited initially

18. Partners sought

This will apply particularly to proposals in the early stages. The answer may be simply "yes" or may specify, for example, areas of expertise.

EUREKA: 14 NEW DUTCH PROJECTS, 50 MILLION GUILDERS PLEDGED

NEW PROJECTS, PARTICIPATING COMPANIES

Rotterdam NRC HANDELSBLAD in Dutch 17 Dec 86 p 11

[Text] Thirty-nine industrial collaboration projects--14 of them Dutch--will be added to the European technology program EUREKA. This year the Netherlands will double its EUREKA budget up to 50 million guilders. This was announced today in Stockholm at the meeting of the 19 ministers from the participating countries.

Since it was introduced by the French President Mitterrand in the spring of 1985 EUREKA has expanded to 111 European projects--including the new plans--with a total value of ca. 4.4 billion ECU, about 10 billion guilders.

The 14 new projects in which Dutch companies are participating have a total value of 132 million ECU, approximately 300 million guilders. Eight of these projects have come to being at the initiative of the Dutch. The most important participant is Philips. Minister De Korte said this morning that the increase in the Dutch funding will be used solely for subsidizing the so-called feasibility studies. No government funds are available to finance the projects themselves.

For the 14 Dutch projects, which had been previously approved, a budget of 30 million guilders was set aside. For the vast majority of the projects this money has not yet been allocated. Ministry officials at the Hague blame this on various delays caused by the tight scrutiny of the finance ministry. In other countries as well the EUREKA projects have similar problems with government backing. The Swedish Prime Minister Ingvar Carlsson referred to this in his opening speech with the words "many do not know yet what exactly EUREKA entails."

In addition to approving the new projects, the European ministers of technology are using the Stockholm meeting to at least informally reach a compromise on the EC research budget. By last week no agreement had been reached on it. The European Commission, the day-to-day manager of the EC is looking for help in getting a new proposal for a budget of 7.5 billion ECU (ca. 8.8 billion guilders) approved. In last week's proposal the figure was 7.7 billion ECU (18 billion guilders) for 5 years.

At the suggestion of the German delegation the possibility of getting private funds along with venture capital from investors for EUREKA use will be studied. Furthermore, the European Market agreement on standardization and the approval of medical equipment, for example, in various countries--themes which were described as the main topics by the European ministers--are going to play an important role in the EUREKA projects. At the initiative of the Dutch, working groups will be established which--in concert with the industrial collaboration--will be scrutinizing these "supplemental guidelines" in detail.

Dutch Projects

At the Ministerial Conference of EUREKA, which was held in Stockholm, altogether 39 new industrial collaboration projects in the field of high technology were approved. Following is a list of 14 projects involving Dutch companies.

JESSI--developing miniaturization techniques for chips--Philips

IHS--integrated computer system for household appliances--Philips

DAB--digitalization of radio broadcasting--Philips

Disposable Sensors--implantable sensors for medical use--Philips, Honeywell Best

DELIETER--software development for digital cartography--Philips

TELEATLAS--digital storage of geographic and topographic data--ANWB

ERTIS--information system for customs offices--NOB Wegtransport

MOBIDICK--resources and equipment for automated translation--Van Dale, Philips

COLASER--developing industrial co-laser--APA[Advanced Production Automation]

High Power Lasers--laser development--Philips

ATIS--data base for tourist information--ANWB

IMPROFEED--enrichment of high-protein elements, including fertilizers--TNO

Ink Jet Printing--computer controlled contact-free printing process--Stork

SSI--interactive translation system for personal computers--Velotype SSI

Rijswijk PT/AKTUEEL in Dutch 17 Dec 86 p 3

[Article by Bart Stam: "With HDTV Philips Pulls the Eureka Car"]

[Excerpts] It appears from the new series of EUREKA projects that Philips has now clearly thrown itself into the European collaboration project. The new projects were discussed in Stockholm at the fourth ministerial conference of the 19 participating countries. In EUREKA IV Philips is represented in some important projects: JESSI [Joint European Silicon Submicron Initiative], submicron technology; DAB [Digital Audio Broadcasting]; DEMETER [Digital Electronic Mapping of European Territory], and IHS [Integrated Home Services]. In addition, Philips' Home Interactive Services is involved in the electronic translation project MOBYDICK. But the most important project for the Eindhoven electronics company will be the High Definition Television [HDTV]. Last week PT/AKTUEEL talked with Engineer H. Wessels, EUREKA coordinator at Philips, about Philips' role in the technological programs of EUREKA.

During the third EUREKA conference in London on 30 June of this year the HDTV, ES2 [European Silicon Structures], and CARMINAT projects already got the EUREKA stamp of approval. Philips is definitely involved in these programs, which, by the way, are still in the initial phase.

Wessels states that in the initial period of EUREKA...Philips has been from the start sympathetic towards the EUREKA venture. Together with some other Western European electronics companies--Thomson, Siemens, GEC--Philips signed a joint declaration in which the companies in principle agreed to the EUREKA goals. Thus the existing EC technology programs--such as Brite, Race, and Esprit--would be complemented. According to Engineer Wessels there should not be any overlapping, because the philosophy and the structure of EUREKA is completely different from the EC technology programs.

HDTV

Wessels is of the opinion that thus far the HDTV project has been the leading project for Philips. The most important partners in the HDTV are Philips, Thomson, Thorn EMI, and Bosch. The goal is to develop a new transmission and production standard for television signals, whereby the current norms could be replaced. At the moment there are in Europe three types of standards that we know of: PAL (FRG), SELAM (France), and NTSC (United States). This, however, still has to do with the standards of the 1950's, which, according to Wessels, are no longer valid for the current state-of-the-art technology. The Philips coordinator is here thinking about satellite TV, digital videorecorders, and fiberglass networks, among other things.

Furthermore, Wessels is of the opinion that the national broadcasting organizations and leaders must get involved in the developments in the television industry.

Japanese Threat

According to Wessels, there was still another reason to develop a new European television standard. All Japanese high technology companies are also working on their own 60 Hz standard (MUSE [Multiple Sub-Nyquist Sampling Encoding]), but the most important difference, according to Wessels, is that Japan has opted for an absolutely revolutionary method. This standard calls for a totally new infrastructure, which then involves also the receiving equipment.

According to Wessels, Europe, on the other hand, has opted for an evolutionary solution. In other words, the existing infrastructure will be adapted to the new technical developments. Which standard from among that exist in the world now will win the battle in the end, will depend on the international organization CCIR, which must make its decision in 1990. Indeed, Wessels thinks that it was wise to have stimulated the development of the HDTV. With such technical challenges as the goal of standardization and normalization, which require a great deal research, one has to dare take risks.

Indeed, the people who made the initiative held a workshop in September this year, inviting specifically small companies to participate in this project. According to both Engineer Wessels and Attorney Van der Bergen, the head of the Dutch EUREKA secretariat, by now 20 companies have promised to collaborate in it. According to Wessels it is also important that in the meantime the project gets the support of the EC Commission.

JESSI

Two weeks ago Philips opened a new laboratory for basic and applied research in the field of integrated circuits. In this lab Philips will carry out research within the framework of the Mega-project.

The new EUREKA project JESSI [Joint European Silicon Submicron Initiative] involves preliminary study of integrated circuits that are smaller than 0.7 microns by Philips, Siemens--both partners in the Mega-project--and the French company Thomson. Since this project was approved, the new laboratory will also play an important role in its research. According to Engineer Wessels, JESSI can become a continuation of the Mega-project. But even JESSI is not the final point. Projects like these are indeed an enormous challenge in finding out where the limits of the integrated circuits are, according to Wessels.

CSO: 3698/216

EEC MEMBERS DISAGREE ON AIMS OF 1987-1991 RESEARCH

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 pp 11, 12

[Text] At the EC Council meeting in Strasbourg, ministers again could not reach an agreement on the scope and details of the new EC research program for 1987-1991. Again, the opposing viewpoints of the larger EC member states, such as the FRG, France, and Great Britain on one side, and the less developed member states of the community on the other, became evident. Whereas the former group is interested in keeping the total financial structure of community research as low as possible--in contrast with the proposals of the EC Commission--and in concentrating these proposals on programs to reinforce industrial competitiveness, a majority of the remaining countries, which have less well developed research capacities, hopes to profit from the community projects.

Federal Research Minister Riesenhuber emphasized that the priorities of the FRG would require a maximum budget of from 4 to 3.5 billion ECU. Moreover, there should be adequate flexibility to accommodate the interests of other countries. The EC commission had proposed 10.5 billion ECU for the research program, but later reduced the plan to 7.7 billion ECU. This amount was further reduced by the finance ministers, who in doing so encountered strong disagreement from the Commission and the European Parliament.

In particular, the EC program for the development of a broadband communications network in Europe (RACE) seems to be under intense discussion at the moment. The definition phase of this program will conclude at the end of the year and, in the opinion of the EC Commission, the operational phase should receive 5-year financing of 800 million ECU. Federal Research Minister Riesenhuber wants to leave this kind of project to the administration of postal services and to industry. EC Commissioner Karl-Heinz Narjes, however, said during a parliamentary debate over uniform TV standards in Strasbourg that in view of the importance of this initiative, it should be carried out like other important EEC programs (ESPRIT and BRITE) on the basis of cost sharing with industry.

Geoggrey Prattie, the British minister for technology and incumbent chairman of the commission, reaffirmed his intention to have the EC program pass before the legislative year ends on 9 December. The EC summit may discuss the matter on 5-6 December if an earlier informal meeting of the ministers does not reach an agreement.

8617/12851
CSO: 3698/M069

FRG INSTITUTE REPORTS RESULTS OF SUBSIDIES TO SMALL, MEDIUM COMPANIES

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 p 6

[Article: "Technological Support in Small and Medium-Sized Companies"; first paragraph is TECHNOLOGIE NACHRICHTEN introduction]

[Text] The Fraunhofer Institute for Systems Engineering and Innovation Research (ISI) has examined in an extensive research project the extent to which envisaged measures respond to different research and development problems of companies. In addition to an international comparison of subsidy programs, differentiated analyses of the effects of contracted research and development and of subsidies for projects in priority fields were carried out in small and medium-sized companies.

During the period under investigation, almost 2,000 R&D projects were subsidized in small and medium-sized companies for a total of DM1.26 billion, with priorities placed on energy and information technology. Three-quarters of the project subsidy goes to a large number of small firms (with fewer than 500 employees). As is the case with allowances for personnel expenditures, project subsidy is used primarily in the industrial branches of mechanical engineering and electronics in which research is intensive. Regional priority was given to Baden-Wuerttemberg, Bavaria, and North Rhine-Westphalia. The overall volume of project subsidy increased greatly from 1976 to 1979 and decreased from 1980 onward, almost simultaneously with the beginning of subsidizing of R&D personnel and of the special programs for the subsidizing microelectronics. However, project subsidy was still of interest to the companies since it subsidized an average of 55 percent of overall R&D costs, while the subsidy for personnel expenditures covered only 40 percent of gross wages and taxable salaries.

Based on interviews with special consultants and project contractors, the overall number of small and medium-sized companies interested in priority-field project subsidies was estimated at between 2,000 and 2,300; subsidies from 1972 to 1983 reached barely half of these. Half of the remaining companies fall within the following fields: microelectronics applications, manufacturing engineering, and physical technologies. Currently, the two first fields are covered by special programs that will be useful mainly for small and medium-sized companies.

The results of the consultations with the subsidized companies were as follows:

--The firms were able to achieve an average increase in sales volume of 50 percent and an employment increase of 4 percent from 1976 to 1982.

--For the most part, firms characterized their own technological level as very high; however, technological and price competitiveness is rated high by more than 40 percent.

--The most serious problems lie in marketing of new products; every fifth firm had problems with market evaluation, every third with sales.

--The firms obtaining project subsidies are more "prone to innovation" than those receiving allowances for R&D personnel expenditures: They have almost three times as many full-time R&D employees and carry 2 and 1/2 times more projects costing more than DM300,000 through to the prototype stage.

--The average development expenditures of the subsidized R&D projects was DM1.15 million; individual shares averaged DM500,000 and duration slightly exceeded 2 years.

--Total expenditures for application and wind-up procedures were estimated at 4-5 man-months on the average; extra expenditures relating specifically to the project were estimated at 3.5 man-months or DM45,000.

--Most of the interviewed firms obtained preliminary information on subsidy opportunities as well as cooperation with special consultants and project contractors without any difficulties. However, about half of them experienced a considerable need for advice in filling out the application.

--More than 70 percent of the subsidized projects involved cooperation with external organizations, particularly with technical universities. Two-thirds of this cooperation did not raise any problems; the intensive transfer of know-how and the use of expensive equipment were considered as the main advantages of such cooperation.

--Three-quarters of the interviewed small and medium-sized companies would consider project subsidy again.

--Most of the subsidized projects reached their technical development goals. On the other hand, sales opportunities for new products and processes were assessed quite differently: Early positive effects on sales volume were almost nonexistent.

However, it must be noted here that sales volume is only one indicator of success for new developments. Indirect and long-term positive effects are often obtained at the individual or national economic level (for example, the preparation of alternative technologies and use of know-how in subsequent projects). However, the development of new products and processes involves technical and economic risks particularly for small and medium-sized companies. In this case, project promotion makes a positive contribution: In many firms it has increased the willingness to start risky, technically demanding projects earlier and/or to extend their own developments considerably.

8622/12859
CSO: 3698/M074

VOLKSWAGEN ENDOWMENT RELEASES 1985-86 RESEARCH REPORT

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 pp 7-8

[Excerpts] On 1 October 1986 Europe's largest scientific foundation, the Volkswagen Endowment in Hannover, published its annual report for 1985-86. In addition to the economic report for the year 1985, this extensive volume contains general information on the foundation's operations and describes its current subsidy program. Since 1962, the foundation has granted over DM2.7 billion to research and education in science and technology through the returns from its assets (at present amounting to DM1.4 billion) and the dividends from Volkswagen shares belonging to the government and the state of Lower Saxony. The foundation can subsidize all scientific fields; however, it concentrates on priorities which change in the course of time. The following table gives a general account of the current subsidy program:

Item	1985 Grants Million DM	Comparative Figures of 1984 Million DM	Grants Up to Dec 31, 1985 Total in Million DM
Priorities mainly related to the humanities and social sciences	30.7	37.3	388.9
Priorities mainly related to natural, engineering and biological sciences	47.5	46.9	509.5
Synergy (since 1980)	4.1	2.4	13.1
Metal-organic reactions for organic synthesis (since end 1985)	0.1	--	0.1
Science of microstructures (since 1980)	5.4	10.5	34.4

Item	1985 Grants Million DM	Comparative Figures of 1984 Million DM	Grants Up to Dec 31, 1985 Total in Million DM
Partnership in foreign institutes (since 1979)	4.0	3.0	16.8
Mathematical and theoretical principles of engineering sciences (since 1971)	10.3	8.6	80.8
Process models of separation and conversion manufacturing methods (since 1983)	2.1	2.7	4.8
Behavior of metallic and ceramic materials in operating conditions (since 1981)	2.5	4.0	18.3
Microcharacterization of materials and components (since end 1985)	--	--	--
Principles of technical combustion processes (since 1981)	3.8	2.6	14.1
Subsidizing infrastructures in engineering sciences (since 1981)	6.7	3.0	14.7
Parasitic diseases of woody plants (since 1984)--Training in wood pathology--	0.2	0.1	0.3
Program: special additional scholarship in clinical medicine (since 1984--first call for applications closed)	--	3.0	3.0
Bio sciences competition (closing date 31 Dec 1986)	--	--	--
Expiring and completed priority programs, including:	8.3	7.0	309.1
archaeometry 1971-1985	(4.3)	(2.5)	(44.6)
physics and chemistry of nonconventional materials (1978-84)	(4.0)	(3.7)	(22.8)
Open Priorities	8.0	4.9	89.2

Item	1985 Grants Million DM	Comparative Figures of 1984 Million DM	Grants Up to Dec 31, 1985 Total in Million DM
Symposia programs (since 1966)	2.4	1.6	15.5
Academic scholarships (since 1971)	5.6	3.3	25.3
China program (since June 1986)	--	--	--
International scientific meeting centers (since 1975)	--	--	48.4
Subsidy outside the present priorities	19.3	10.3	1184.8
Lower Saxony priority program	31.5	16.5	553.1
Totals	137.0	115.9	2725.5

8622/12859
CSO: 3698/M076

EC CALLS FOR BIDS ON MATERIALS DATABASE NETWORK

Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 p 11

[EC Commission document entitled: "Community Program for the Development of the Technical Information Market in Europe--Notification of a Call for Bids"; date of issue not given]

[Text] 1. In accordance with its policy of promoting the availability, quality, and utilization of European information products and services, the EC Commission, on the advice of the Committee for Scientific and Technical Information and Documentation (AWTID), is implementing a 5-year program for the development of a technical information market in Europe (1984-88). Within the framework of this program, the commission has determined several priority fields, one of which concerns materials databases. Appropriate community initiatives should improve market transparency and make information products and services in this field more user-friendly.

2. The commission has formulated a project for the development of a European system of information services for data on materials. Within this framework, the commission is currently implementing a demonstration program for materials databases in which as many as 11 European databases are connected to a pilot network for online provision of information and services for materials for mechanical engineering. For this purpose, a certain harmonization of databases is necessary at different levels.

Harmonization of technical terms and definitions used by individual databases is particularly important. In this connection, a reference terminology is to be created containing the most important expressions from the individual databases participating in the demonstration program. Moreover, to make access to these databases easier for users in all EC countries, the reference terminology must be available in all the community languages. To create such a multilingual reference terminology for the mechanical engineering materials databases participating in the demonstration program, the commission would like to enlist the services of a contractor.

3. Appropriate private or public institutions interested in submitting bids may request further documents from the following address:

--Commission of the European Communities,
General Management for Telecommunications, Information Industry, and Innovation,
GD XIII/B, Office C4/011 (Mr G. Steven),
L-2929 LUXEMBOURG

Bids are to be submitted in one of the official languages.

The deadline for submitting bids is set at 8 weeks from the date of publication of the present notification.

8622/12859
CSO: 3698/M077

EEC'S SPRINT PROGRAM PROMOTES INNOVATION

Brussels EUROPEAN FILE in English No 18/86 Nov 86 pp 3, 5-11

[Excerpts] The ability to innovate is without doubt a particular and essential characteristic of human nature. It has a fundamental role in the development of civilizations. In the present context of rapid technological progress and ever-closer interrelation of economies, the future of our societies depends more than ever on their capacity for innovation. This capacity affects growth, the creation of employment, social and cultural progress, the raising of living standards, improvement of the environment, etc.

Until recently Europe was one of the world's richest sources of innovation. However, the international economic crisis and the effectiveness of competition from America, Japan and elsewhere have called Europe's position into question, particularly in the development of new advanced technology. Europe must reactivate all its misused and underexploited potential for innovation, not just in order to remain among the leaders, but even to stay in the race and avoid serious economic and social decline.

For several years, the European Community authorities have been aware of this need. On different occasions, at meetings of the European Council, the Heads of State or Government of the member countries have underlined the priority to be given to improving businesses' capacity for innovation. The Luxembourg agreement of December 1985, on a 'Single Act' revising the Treaty of Rome, solemnly made it one of the essential aims of the Community to reinforce the scientific and technological bases of European industry and improve Europe's international competitiveness.

It was in this spirit that the European Community's Council of Ministers launched, in November 1983, a first plan for the transnational development of infrastructure to assist innovation and technology transfer. This Community initiative proved a rich and varied testing-ground. It has completed its first three-year phase and is to be continued after 1986 under a new name: Sprint (Strategic programme for innovation and technology transfer).

An original strategy

According to the experts, there are two key conditions of prime importance to the development of the innovation process: one is the organization of contacts between people of different backgrounds and skills, the other is the creation of a vast melting-pot of ideas and information. The Community's innovation programme is based on this two-fold central idea. For its first experimental phase (1984-86) it had a modest budget of 10 million ECU.[1] There are three main axes: promoting direct transnational contacts between agencies for fostering innovation in SMEs, improving the tools for information and communication, and developing cooperation between Member States of the Community.

- ☐ The first axis has been primarily concerned with human networks and liaison mechanisms. The approach has been to promote infrastructure that aids in-

novation, rather than to intervene directly in enterprises. Action has been concentrated on public and private advisory bodies that assist SMEs: chambers of commerce and industry, regional development agencies, innovation centres, private consultants, venture capital organizations, etc. However, the essential purpose of increasing transnational contacts between these intermediaries is to encourage contacts of the same kind among the firms they advise.

These actions, concentrating on the development of transnational contacts and collaboration, are part of a strategy for the gradual creation of a real European grid of networks of intermediaries. By getting to know one another better, by comparing their methods, by exchanging information and business opportunities, these specialists come to work concretely and directly on the transnational dissemination of innovation and technology transfer in SMEs. In all, in the first three years of operation of the Community programme, nearly a thousand bodies of all kinds have been involved in this process.

☐ The object of the second axis of the European innovation programme is the reinforcement of certain structures under two headings: circulation of ideas and information, and tools for communication. Among the Community initiatives of this kind are:

- Aids for the 'Europeanization' of conferences on technology and innovation. As these debates play a fundamental role in the spread of knowledge, the organizers can obtain financial aid for the participation of specialists from other member countries and for translation and dissemination throughout the Community of accounts of the proceedings. Three calls for proposals have been launched since 1985 and more than 60 conferences selected to receive support of this kind.

- Arrangements for systematically sending to trade journals synopses of reports on public research work in the different Community countries. This project, called 'EuroTechAlert', is based on an experiment carried out in the United Kingdom: there it was possible to disseminate to businesses many research findings which up to then had been under-used and which constitute an important potential source of innovation. Various Member States have agreed from now on to cooperate on a programme of this kind and to set up the national machinery for supplying and disseminating such synopses. The Community looks after translation costs and the central management of the system.

- Preparation of a computerized index which allows comparison of technical standards: national, European and international. This data bank, christened 'Icone', is intended to help businesses to overcome the obstacle to innovation development posed by the existence of more than 80 000 national standardization documents, of which more than 60% still have hardly any European or international equivalent.

- Several specific measures to allow certain regions, that have inadequate infrastructural support for innovation, to participate fully in the Community's various transnational projects. Greece has received Community aid of this kind to develop its system of protection of industrial property and to set up sectoral centres for technological information. Ireland has also been given support for an experimental project to promote robotics in SMEs.

☐ The third segment of the Community programme is aimed at developing the indispensable cooperation among those responsible at national and Community level for promoting innovation and technology transfer. It involves taking stock of and comparing experiences and achievements, avoiding duplication where it arises, uniting forces to pursue lines of action already under way and jointly exploring new possibilities. Worthy of mention in this connection are:

- The compiling of a single directory for the whole Community (including Spain and Portugal) of public aids for research, innovation and technology transfer. This catalogue of all the incentives and initiatives of national authorities in the fields of taxation, collective research, venture capital promotion and regional development is published in London by Kogan Page Limited. It is a guide for industrialists, as well as a source of reference and comparisons for administrations.

- The launching of a series of studies on the ways national authorities ensure optimal use of the results of publicly-funded research. These studies could later serve as the basis of a system for transnational dissemination of such results.

- The formation of a working group to develop cooperation between Member States and the Community in the field of industrial design: the process of seeking – often using very sophisticated techniques and materials – a synthesis of aesthetics, user requirements and product price. There has also been a first allocation of aid to design promotion projects jointly undertaken by specialized organizations in the various Member States: joint publication of manuals, a travelling exhibition, transnational collaboration among businesses, etc.

- The setting-up of another working group to study possible improvements in the operation of national systems for protecting industrial property, in order to stimulate innovation.

- Recent intensified concertation for the promotion of innovation in certain traditional industrial sectors: textiles, leather and footwear, traditional ceramics, etc.

A long-distance Sprint

Innovation means letting the imagination hold sway. The promotion of innovation itself demands the imagination to deploy a wide range of means to stimulate the process. The first phase of the Community programme has enabled an assortment of initiatives and projects to be set up. These experiments have been conceived and prepared with the active participation of the interested parties. Throughout the programme there has been a two-fold confrontation of people, their ideas and their practices:

- ☐ In the first place, the conception of the programme and its execution, for which the European Commission was made responsible, have been under constant assessment and evaluation by an advisory committee of senior civil servants assigned by the Member States. This committee has played a very active role, especially in stimulating the various working groups already mentioned.

- ☐ Secondly, since the programme got under way, various symposia, colloquia and seminars have been attended by both consultants and managers, enabling them to formulate their own needs and expectations.

At the moment it is still difficult to evaluate the results obtained in this first phase of Community action. However, first indications testify to the success of the programme, despite its recentness and the delays inherent in all innovation and technology transfer processes. In transnational collaboration, for example, the preparation, negotiation and conclusion of technology transfer agreements between firms all take time. None the less, the stimulation of joint activities by advisory bodies has already led to several hundred contacts between SMEs in different parts of the Community. Dozens of concrete agreements have already been concluded.

Such efforts should have continuity. That is why the European Commission has proposed to the Council of Ministers a draft decision on continuing and enlarging the programme for a period of two years (1987-88), so that activities already embarked on may be pursued in more depth and extended to the two new Member States of the Community, Spain and Portugal.

In the immediate future, the proposal to extend Sprint would provide for:

- ☐ The organization of training activity for specialists to advise SMEs on innovation and financing it and on technology transfer;
- ☐ The establishment of liaison mechanisms between local authorities in Community countries; these could play a very active role in promoting innovation, both through their procurement policies for equipment, goods and services, and by creating a favourable environment for innovative firms.

On a wider scale, Sprint should also enable preparations to be made for an ambitious five-year programme, beginning in 1989 and answering the requirements of economic operators.

After its next phase, which is seen as a 'definition' stage, Sprint could reach its cruising speed and become, in the long term, the instrument of a Community innovation assistance programme.[1] ■

/12828
CSO: 3698/A143

BRIEFS

EC RESEARCH COMPETITION STUDY--In the 1984-85 main report (document BT 10/5860, under the heading "Concentration and Cooperation in the Field of Research and Development," the EC Commission stated that "entrepreneurial cooperation in the field of research and development must be encouraged." The Federal Agency for Cartels pointed out in its 1983-84 activity report that certain technical programs can be carried out only through mutual cooperation in which, however, the possibility of potential future competition must be guaranteed. The monopoly commission has requested an analysis of "Competitive Limitations Through Joint Research and Development Programs According to U.S., European, and German Cartel Laws." The final report, prepared by Prof Dr Hans Ullrich of the Max Planck Institute for Foreign and International Patents, Copyright, and Competition Law in Munich, is to be submitted to the commission in 2 years. [Text] [Bonn TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German No 442, 28 Oct 86 p 3] 8622/12859

CSO: 3698/M075

AUSTRIA REVIEWS REPORT ON COCOM EXPORT REGULATIONS

Vienna DIE PRESSE in German 14 Jan 87 p 3

[Article by Georg Possanner, Washington: "Expensive Technology Barriers?"]

[Text] The efforts to cut off the Warsaw Pact from an inflow of western high technology has enhanced the security of the USA only to an insignificant extent; on the other hand, it has cost the economy 188,000 jobs and 9.3 billion dollars per year. Also, it has largely undermined relationships with allies and "friends". With this insight, the "National Academy of Sciences" (NAS) in the USA puts itself into sharp contrast with the Pentagon. The Pentagon has recently estimated savings in the US defense budget, due to export controls, at several billion dollars.

The studies, begun in 1984, were performed by a team of experts under the leadership of the former General Chief of Staff of the Air Force, Lew Allen. The committee included, among others, also the former Minister of Defense, Melvin Laird, as well as the previous acting CIA chief, Bobby Inman, and leading representatives of the relevant industries. This assemblage imparts to the results a corresponding political weight. It promises to heat up anew public discussion concerning the meaningfulness of the export barriers - even among countries such as Austria which do not belong to the control organization COCOM.

The US export control law of 1985, as has been reported, does indeed represent only a compromise between diverging opinions in the administration and the Congress. As the study states, it gives the Pentagon a "de facto veto" of high technology export.

Under the pressure of the Reagan administration, Austria has decreed strict legal regulations concerning the export of US high technology, even though this is not readily admitted in Vienna. For Austria, a change of mind on the part of the Americans would have several consequences.

1. A liberalization of exports with respect to the East would benefit neutral countries all the more.

2. It would be easier for Austrian companies to gain access to American high technology.

3. Austrian engineers would have better access to American top technology.

4. American companies who have closed their eastern Europe offices in Austria, in connection with the increased stringency of the export regulations, could again open up.

A change of posture on the part of the Reagan administration, which could entail a liberalization, is not to be expected, as was explained to the "presse" in the Ministry for Trade, Defense and External Affairs.

The Academy study comes to the following economic and security-policy conclusions:

The economic welfare of the USA is essentially based on the capability of being able to export overseas. The American predominance in the high technology sector has been eroded, however, by Japan, western Europe, and the young industrial nations of the Asiatic and Pacific area. In 1981, there still was a trade-balance surplus in high technology; in 1986, this has for the first time changed into a deficit.

Indeed, this was not based entirely on the rigorous export barriers, but these form a "clear stimulus" for purchasing such products in other countries. This trend can be felt especially strongly in Europe. Consequently, corporations held back from relying on American high tech products if comparable products could be obtained without restrictions. This reaction is explained not only by worry about additional costs and delays, but, even more importantly, in terms of the view that the Americans are not reliable suppliers.

The United States and its allies are technologically ahead of the Soviet Union by at least five years and by at most 10 years. The experts of the Academy thus came to the conclusion that "despite intensive procurement efforts on the part of Moscow, it has not been possible for them to catch up with the West's superiority... It is likewise improbable that the inflow of western technology into the Soviet Union will make it capable of reducing this gap significantly, as long as the West retains its innovation tempo."

The US Defense Department and its leading "export controller", Secretary Richard Perle, have a different opinion. Although the study was partly financed by the Pentagon, it predominantly reflects the opinions of the industrial representatives. Perle rather believes in a study by his own department, according to which the Soviets, without high tech controls, would have saved up to a billion dollars per year in military expenditures. On the other hand, without these barriers, the USA would have incurred between 7.3 and 14.6 billion dollars additional costs, to compensate Moscow's progress.

8348
CSO:3698/283

HUNGARY: DEVELOPMENT, PLANS IN BIOTECHNOLOGY

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 pp 28-34

[Articles compiled by Pal U. Kralovanszky, director of the Protein and Biotechnology Bureau of OMFB [National Technical Development Committee]]

Background of Hungarian Biotechnology

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 p 28

[Text] Biotechnology requires specialized knowledge; consequently, training and education attain an emphatically important role. The demand is also similar with respect to the technological-technical foundation. Therefore, about 20 percent of the R + D effort is spent on cultivating the so-called functional tasks and on alleviating deficiencies.

Within university-level education, the Technical University of Budapest and Eotvos Lorand University embarked on starting a joint biologist-engineer training program already in the 1970's. For several years, a biotechnological type of training has been conducted at Jozsef Attila University of Szeged and at Eotvos Lorand University and, more recently, every university of agrarian sciences has formed a biotechnological training unit.

In the interest of the professional training of specialists needed for the OKKFT [National Central Medium Term Developmental Plan] program, two types of postgraduate training programs were started for young professionals. A year of research training through regular work under a given senior scientist is provided. Every year at least 10 to 14 individuals undergo such training. Thereby we wish to insure the supply of research scientists. The training of specialized biotechnological engineers, in form of a postgraduate education, was started in 1984 at the Technical University of Budapest and in 1986 at the University of Agrarian Sciences in Godollo; the former is open only to engineers while the latter is also open to interested graduates of other universities, humanists and educators.

In the framework of the program, numerous fermentation and separation technological investigations, computer programs and guidance techniques are included. These efforts are closely associated with the training of specialists and, with a view to this, an experimental base was established

within the Department of Agricultural Chemical Technology at the Technical University of Budapest.

Research Centers, Aims

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 pp 30-31

[Text] "Within the next decades, biotechnology and the biological industries will bring about decisive and powerful progress in the scientific and economic sectors similar to what we experienced in the field of microelectronics"--we read in the situation analysis prepared back in 1982 under the guidance of the Hungarian Academy of Sciences.

After an evaluation and analysis of the results of the first 2 years of the 7 year long OKKFT [National Central Medium Term Developmental Plan] program, it was extended to the Seventh Five-Year-Plan. These days, the R + D work providing the backbone of domestic biotechnology is known as the G/3 program.

In the area of modern biological and genetic trends, a rapid regrouping of the material and intellectual resources took place. The new term "biotechnology" has been in increasing use, new views also started to gain ground at scientific conferences and it also could be shown that spectacular research-development efforts are being made in the industrially developed capitalist countries.

Based on a study by the Hungarian Academy of Sciences, the Committee on Science Policy decided that a concrete proposal must be made for the eventual promotion of R + D work in this field. In addition to the Hungarian Academy of Sciences, the Ministry of Industry, the Ministry of Agriculture and Food Supply and later the National Technical Development Committee also took part in this effort.

Within a relatively short time a program proposal was submitted to the government which was accepted by the end of 1983.

It was included in the R + D proposal that, in view of the scientific-technical development budgets for the years past, our economic situation, our strengths, and comparable global developmental trends, biotechnological development should not be a general, across-the-board undertaking. It would be most effective to concentrate a significant part of our material and intellectual resources in a few promoted areas. This concentration of effort also required that the traditional biotechnologies in general cannot be included among specially emphasized research programs. First of all, the development and application of new biotechnological procedures with a promise for long-range competitiveness must be promoted.

The National Technical Development Committee proposal was accepted by the government and, based on it, in 1984 a research program entitled "research and development of biotechnological procedures and their application in agriculture and industry" was started on a national level--[National Central Medium Term Developmental Plan].

In our country, research or development efforts involving some branches of biotechnology are being made in about 50 institutions (research institutes, university departments, factories, agricultural enterprises). Over 500 graduate scientists are working in this field. This number represents only about 1.5 percent of the workers employed in the research-development segment of the country and their distribution among the branches is very uneven. (In view of the broad range of biotechnology, a gradual expansion of the intellectual forces must be achieved in a targeted manner in the future.) Currently, there are only 8 institutions with more than 10 research scientists. The largest and most significant among them is the Biological Center of the Hungarian Academy of Sciences in Szeged with basic research as its primary task. Therefore, within the individual research topics, close cooperation must be maintained among the independently organized R + D places within the program designated as G/3 which has the task of embracing R + D projects which can be realized over the medium range. Therefore, it cannot include the otherwise indispensable basic research but it also cannot expand in a direction where realization can be predicted only by the turn of the millenium. Therefore, every research-development engineer, working in individual areas of biotechnology, cannot participate in the program. (It must be noted here that an open competition was called for by the program and everyone could compete with different topics. These were, of course, used to select the topics that were within the framework of the program and, therefore, supported.)

The following projects, aimed at production, belong to the program:

--Genetic manipulation of plant cells and culture of plant tissues to increase the yield of agricultural plants.

--Gene technological procedures in plant protection to increase the resistance of plants and also to adapt N-fixing microorganisms and to increase their effectiveness.

--Biotechnological procedures to increase the genetic capacity and productivity of animal raising.

--Biotechnological procedures in food processing and fodder preparation to improve the value of food and fodder.

--Use of biotechnological procedures in vaccine production and in the production of veterinary diagnostics.

--Enzyme production using genetically engineered cells and study of the use of these enzymes in the food industry.

--Hormone production with genetically engineered cells.

--Antibiotics production with genetically engineered cells.

--Molecular synthesis and transformation with genetically engineered or fixed cells.

--Production of diagnostic materials and monoclonal antibodies.

--Operational purification methods to produce biologically active materials; elaboration of new methods of process guidance.

--Biotechnical procedures in the broader sense, applicable in environmental protection--waste water purification using a microbial membrane procedure.

--Biometallurgical procedures for the enrichment and extraction of ores.

The G/3 Program

--from the point of view of basic research, is helped by the work conducted within the National Central Medium Term Developmental Plan program under the guidance of the Hungarian Academy of Sciences and entitled "Basic research in biology," and by some independent, individual topics financed through OTKA [expansion unknown],

--from the point of view of the developmental background, will be greatly helped by the departmental-level program of the Ministry of Industry entitled "The R + D tasks of biomass production and utilization" and designated as T-3. One of its subprograms is entitled "Development of biotechnological R + D and its infrastructure as well as its machine and technical-industrial base."

It contains the following more important developmental tasks:

--formation of a fermentor family and securing the conditions for computer-guided processes,

--development of instruments used in biotechnology,

--development of technical equipment needed for processing the products of bioreactors,

--establishment of experimental pilot plants suitable for up-scaling,

--use of biotechnology in industry (development of prototypes of industrial-size systems).

Collection of Strains of Microorganisms

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 p 30

[Text] In the framework of the National Central Medium Term Developmental Plan programs, the Hungarian National Collection of Agricultural and Industrial Microorganisms was successful. The collection, functioning with nearly 20 people at the Department of Microbiology of the Horticultural University, has the equipment to insure storage of the deposited microorganisms in viable and contamination-free condition. Each strain of microorganism is preserved either in a lyophylized or deep-frozen state.

As a result of the enormous advances in the field of biology, not only procedures but also microorganisms can be patented today. According to the regulations, deposition and preservation of the viability of the strain in question is necessary so that it can be pulled out at any time in case of controversy. As of 1 June 1986, the Horticultural University also attained the legal status of an "international repository organ. "(According to the so-called Budapest Accord, for purposes of international patenting, the microorganisms must be deposited in a collection with internationally approved legal status. We have special domestic statutory provisions covering them.)

Pilot Plants, Research Parks

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 p 31

[Text] So far neither the enterprises nor the publicly financed institutions could adequately equip larger than laboratory-scale research-development plants for the new type of biotechnology. The Hungarian Academy of Sciences report prepared in 1982 for the committee on science policy already stated that "the equipment of several significant research institutes and factory laboratories is definitely poor. In addition to the antiquity or lack of laboratory equipment, successful work is also hindered by the lack of semi-industrial and small industrial equipment."

Therefore it is indispensable that the technical-material conditions necessary for biotechnology be secured on time. We support a further development of the experimental plant at the Department of Agricultural Chemical Technology of the Technical University of Budapest, suitable for the bioengineering tasks already mentioned, and the establishment of pilot-size capacities for the development of certain procedures at the Central Chemical Research Institute of the Hungarian Academy of Sciences. It is expected that--with support from the National Technical Development Committee--a nationwide (network-like) capacity consisting of 6 to 10 tissue culture laboratories in the field of agriculture will also be established which, after research, is the next link in the chain toward practical development.

The Hungarian Academy of Sciences and the Ministry of Industry have encouraged the establishment of joint "Industrial Biotechnological Laboratories." The Committee on Science Policy and later the ATB [State Planning Commission] provided the necessary financing for its establishment and development work had already begun.

The development unit consists of an applied research-development laboratory and an attached pilot plant suited for the elaboration of technologies. In the industrial-scale laboratory being built next to the Biology Center of Szeged, the trends of specialized activities were determined on the one hand, based on the already available results of basic research and, on the other hand, in accordance with the planned goals, based on previous surveys among the potential domestic users especially the pharmaceutical and food industries. The above mentioned activities of the laboratory are concentrated in the following specialties:

--molecular biology including the recombinant DNA technique, modification of bacteria and phages, and improvement of their properties,

--cell cultures (primarily animal and plant cell cultures),

--microbiology, predominantly gene technological procedures (ex: DNA cloning, improvement of lines),

--development of immunobiological products, among them monoclonal antibodies and diagnostic materials,

--introduction and application of modern analytical methods in association with the above tasks.

The laboratory will have about 20 workers to start with. The Agricultural Biotechnological Research Center at Godollo was established for the purpose to accelerate spreading of the new technologies in agriculture. On the one hand, the Agricultural Biotechnological Research Center will provide a developmental laboratory base for those agricultural enterprises which, at present, are not yet able to adopt the modern procedures. On the other hand, the center at Godollo will also have a rotating system to provide for the advanced training of specialists from agricultural enterprises and farms, thereby further expanding the circle of biotechnology users. In addition to central support, the MEM [Ministry of Agriculture and Food Industry] has also secured considerable funds from World Bank loans for this purpose and the center, established at a nearly half billion forint investment, will be ready by the first half of 1998.

Five-Year-Plan Program

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 pp 33-34

[Text] What will the Seventh Five-Year-Plan bring? The results of biotechnology are expected to bring considerable progress in the field of the food and pharmaceutical industries. However, the apprehension of some regarding the "genetic hell" is unfounded.

In the field of food management, the production of new, resistant species (mainly potato and vegetables) is possible by means of plant cell and tissue cultures. These can produce $ 2 to 3 million in imports annually. Embryonic manipulation and embryo transplantation can be developed into a more important technological procedure. We shall be able to gradually satisfy the needs of the food industry, which uses several enzymes, and we shall adopt the modern methods of vaccine production. Thereby we can redeem a significant part of existing imports.

The needs of animal raising for amino acids, antibiotics and some additives will be satisfied gradually by more adequate production involving new types of strains, more effective fermentation procedures--in part through domestic development.

Expected in the field of the pharmaceutical industry is an expansion of the range of human antibiotics, the development of biotechnological procedures for making alkaloids, steroids and vitamins, initiation of an official permit process to market the human insulin preparation, an expansion of the computer guidance of fermentation processes (mass spectrophotometer - fermentor - microprocessor system) from semi-industrial to industrial scale and its wider distribution.

Results expected from the improvement of intellectual-material conditions: in postgraduate training, we shall provide for the specialized training and for the organization of the specialization of at least 100 engineers, we shall provide 1 year of research training for 60 to 80 young scientists, we shall run the gene bank of microorganisms as an international depository organ, we shall develop the domestic fermentor family together with the necessary guidance technique, and we shall provide for the domestic production of the 6 to 10 imported instruments vitally important in research, up to the "0-series."

It is difficult to predict exactly when these results will be achieved but it should be mentioned that, in the developed industrial countries, the rate of progress in biotechnological research at the best known research places is 4 to 7 years, that is, it takes this long to develop a research result.

It is obvious that, if the leading biotechnological enterprises of the world (Cetus, Genentex, Genex, Hybritech, etc.) needed 2 to 4 years to prepare for a given production and a further 1 to 3 years to obtain official permits and to introduce the products, it will clearly require a somewhat longer time in our case.

The current results of biotechnological research are expected to become widespread more rapidly than was the case with the traditional biotechnological procedures. It is promoted by the already attained technical-technological culture and level, and also by the international competition. It is difficult to predict today what kind of rearrangement in the Hungarian economic sphere will be produced by the new biotechnologies; nevertheless, it is certain that economic receptiveness must be considerably improved within a short time by increasing enterprisal independence and incentives.

With the development of biotechnology, society's attitude toward biology is modified and it is expected that there will be increased apprehension on the part of society because of the more extensive interference with biological processes. Namely, many people are afraid that interference with living organisms will upset the balance of nature of thousands of years and a "genetic hell" will be let loose. On the other hand, the entire development of the biosphere has occurred by exactly the same but extremely slow processes which also provided evolution. Among these, only those survived the "struggle for survival" which could adapt to the changing environment and living conditions.

We are convinced that such dangers need not be expected because--as confirmed repeatedly--the modified organisms and microorganisms produced by the genetic transfer procedure are capable of living only under specific environmental

conditions significantly different from natural. Moreover, within the past few years, official permission to use products made by the new genetic methods and by the new biotechnologies has become subject to considerably more stringent regulations in many countries. Much care is being taken globally that the occasionally arising fear of society should not rest on uncertainty. Legal sanctions and experimental protocols have become more stringent not only in the research area but also in the interest of safety which is reassuring and is proof of deliberate foresight.

In Hungary, the experts are prepared for the research and development of new biotechnologies and, in this respect, we are attuned to similar efforts worldwide. However, we are lagging in receptiveness and in the provision of monetary funds needed for development. The development and application of biotechnology was listed among the main trends of technical development which were accorded preference in the Seventh Five-Year-Economic-Plan. Accordingly, procedures which are at a sufficient level of technological and technical development and can be introduced in production within a relatively short time were summarized in an "Activity program" by the National Technical Development Committee, Ministry of Agriculture and Food Industry, and Ministry of Industry. The activity program was discussed by the GB [Economic Committee] and its resolution contains the following main points:

Although development of the traditional technologies should not be dispensed with, attention must be focussed on the development of the new biotechnologies since only these can provide more significant economic advantages. Therefore, a gradual improvement and modernization of the biotechnological activity program is needed which, based on the domestic and international research results, contains the projects which must be attended to by the respective guidance organs, research institutes and enterprises in the interest of widespread practical utilization of the results as early as possible. Based on previous international and domestic development activities and trends, a relatively extensive biotechnological production breakthrough can be predicted. Therefore, according to the resolution by the Committe on Science Policy, the preliminary work on the Biotechnological Central Economic Development Program must be started. Their realization can be projected to the years following the 1990's.

We hope that the coordinated domestic research program, the concept of the Biotechnological Central Economic Development Program to be formulated in the near future, and the associated international cooperation will result in a more rapid rate of development. Biotechnology will achieve a share that is indispensable for the future.

Limited Finances Are Discouraging

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 p 33

[Text] The technological procedures utilizing the biomass are certainly more economical with respect to raw material and energy use than procedures starting from basic and raw fossil materials. Certain modern techniques such as gene manipulation can be introduced into traditional technology thereby increasing the yield of industrial fermentation and improving the

productivity of microorganisms, but a procedure based on a completely new biotechnology could also be put into operation.

Although we know that, by using the new products, the level of health care and therapy would be raised in a manner difficult to express in monetary terms, industrial production would expand, and the food supply and feed utilization would improve, it is all in vain since, at the present time, we hardly have the resources that are needed.

Our financial and material conditions are very poor. In general, we do not have sufficient investment capital to change the technologies or to establish the new production capacities. In addition, we would need changes mainly in the field of machine, tool and instrument production. The biotechnological processes require new technical solutions but, knowing the limited possibilities for foreign currency, we must be set up to produce these or else we will be left behind for good both in the international arena and in domestic production.

Modern biotechnology requires process-guided fermentors, enzyme reactors and specialized associated servomechanisms, microprocessor guidance systems, multi-channel analyzer and sensor equipment, etc. In addition, the development of special instruments is also needed. Unfortunately, pertinent domestic estimates indicate that these things are unavailable to us. The domestic industry is not always able to produce even the machines, fittings, valves and regulators. The socialist market is very limited in this respect and the capitalist market would require foreign exchange. It is in our basic interest to develop the necessary tools and equipment through goal oriented, rapid action.

Methods of International Cooperation

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86I p 34

[Text] International cooperation is brought about through four channels. In the framework of bilateral cooperation and agreements on governmental levels involving certain goals of the target program, the CEMA countries have reconciled, during the past few years, the most important biotechnological research tasks whose solution they declared as being in their common interest. The scientists from the socialist countries started from the fact that, by advancing microbiology, genetics, biochemistry, physiology and other branches of science through the synthesis of the most recent research results, new possibilities can be opened in food production, the production of natural raw materials, the development of manufacturing procedures, environmental protection and, not last, in the diagnosis, treatment and prevention of serious diseases. At the end of 1985, cooperation for a rapid rate of biotechnological development was included as one of the main trends in the complex program involving the scientific and technical advancement of CEMA nations up to the year 2000. In this mainly biotechnological direction, the experts resolved to have joint research and development for the solution of over 160 problems. Hungary is actively participating in about two-thirds of these problems.

The joint projects to be carried out among CEMA nations did not exclude the possibility that the individual member nations maintain a more direct and active relationship in the field of biotechnology through bilateral cooperation. Accordingly, our country had signed bilateral agreements with the GDR, Bulgaria, Czechoslovakia and Rumania, and cooperation with the Soviet Union and Poland is in the formative stage.

Under the protection of the UN, the establishment of an International Biotechnological Research Center is being organized by UNIDO. The shape and contentual details of this cooperation are currently being formulated. Theoretically it is possible for Hungarians to accept employment, participate in joint research programs, become lecturers at seminars, etc.

We want to support participation at meetings providing good possibilities for information gathering and personal contacts. Of special importance are the scholarships which are announced and evaluated in a generally known manner. It can be expected that possibilities for special biotechnological scholarships will also be secured, for example through the UNDP.

We are convinced that such dangers need not be expected because--as confirmed repeatedly--the modified organisms and microorganisms produced by the genetic transfer procedure are capable of living only under specific environmental conditions significantly different from natural. Moreover, within the past few years, official permission to use products made by the new genetic methods and by the new biotechnologies has become subject to considerably more stringent regulations in many countries. Much care is being taken globally that the occasionally arising fear of society should not rest on uncertainty. Legal sanctions and experimental protocols have become more stringent not only in the research area but also in the interest of safety which is reassuring and is proof of deliberate foresight.

In Hungary, the experts are prepared for the research and development of new biotechnologies and, in this respect, we are attuned to similar efforts worldwide. However, we are lagging in receptiveness and in the provision of monetary funds needed for development. The development and application of biotechnology was listed among the main trends of technical development which were accorded preference in the Seventh Five-Year-Economic-Plan. Accordingly, procedures which are at a sufficient level of technological and technical development and can be introduced in production within a relatively short time were summarized in an "Activity program" by the National Technical Development Committee, Ministry of Agriculture and Food Industry, and Ministry of Industry. The activity program was discussed by the GB [Economic Committee] and its resolution contains the following main points:

Although development of the traditional technologies should not be dispensed with, attention must be focussed on the development of the new biotechnologies since only these can provide more significant economic advantages. Therefore, a gradual improvement and modernization of the biotechnological activity program is needed which, based on the domestic and international research results, contains the projects which must be attended to by the respective guidance organs, research institutes and enterprises in the interest of widespread practical utilization of the results as early as possible. Based on

previous international and domestic development activities and trends, a relatively extensive biotechnological production breakthrough can be predicted. Therefore, according to the resolution by the Committe on Science Policy, the preliminary work on the Biotechnological Central Economic Development Program must be started. Their realization can be projected to the years following the 1990's.

We hope that the coordinated domestic research program, the concept of the Biotechnological Central Economic Development Program to be formulated in the near future, and the associated international cooperation will result in a more rapid rate of development. Biotechnology will achieve a share that is indispensable for the future.

Situation Discouraging

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86 p 33

[Text] The technological procedures utilizing the biomass are certainly more economical with respect to raw material and energy use than procedures starting from basic and raw fossil materials. Certain modern techniques such as gene manipulation can be introduced into traditional technology thereby increasing the yield of industrial fermentation and improving the productivity of microorganisms, but a procedure based on a completely new biotechnology could also be put into operation.

Although we know that, by using the new products, the level of health care and therapy would be raised in a manner difficult to express in monetary terms, industrial production would expand, and the food supply and feed utilization would improve, it is all in vain since, at the present time, we hardly have the resources that are needed.

Our financial and material conditions are very poor. In general, we do not have sufficient investment capital to change the technologies or to establish the new production capacities. In addition, we would need changes mainly in the field of machine, tool and instrument production. The biotechnological processes require new technical solutions but, knowing the limited possibilities for foreign currency, we must be set up to produce these or else we will be left behind for good both in the international arena and in domestic production.

Modern biotechnology requires process-guided fermentors, enzyme reactors and specialized associated servomechanisms, microprocessor guidance systems, multi-channel analyzer and sensor equipment, etc. In addition, the development of special instruments is also needed. Unfortunately, pertinent domestic estimates indicate that these things are unavailable to us. The domestic industry is not always able to produce even the machines, fittings, valves and regulators. The socialist market is very limited in this respect and the capitalist market would require foreign exchange. It is in our basic interest to develop the necessary tools and equipment through goal oriented, rapid action.

Budapest UJ IMPULZUS in Hungarian No 25, 13 Dec 86I p 34

[Text] International cooperation is brought about through four channels. In the framework of bilateral cooperation and agreements on governmental levels involving certain goals of the target program, the CEMA countries have reconciled, during the past few years, the most important biotechnological research tasks whose solution they declared as being in their common interest. The scientists from the socialist countries started from the fact that, by advancing microbiology, genetics, biochemistry, physiology and other branches of science through the synthesis of the most recent research results, new possibilities can be opened in food production, the production of natural raw materials, the development of manufacturing procedures, environmental protection and, not last, in the diagnosis, treatment and prevention of serious diseases. At the end of 1985, cooperation for a rapid rate of biotechnological development was included as one of the main trends in the complex program involving the scientific and technical advancement of CEMA nations up to the year 2000. In this mainly biotechnological direction, the experts resolved to have joint research and development for the solution of over 160 problems. Hungary is actively participating in about two-thirds of these problems.

The joint projects to be carried out among CEMA nations did not exclude the possibility that the individual member nations maintain a more direct and active relationship in the field of biotechnology through bilateral cooperation. Accordingly, our country had signed bilateral agreements with the GDR, Bulgaria, Czechoslovakia and Rumania, and cooperation with the Soviet Union and Poland is in the formative stage.

Under the protection of the UN, the establishment of an International Biotechnological Research Center is being organized by UNIDO. The shape and contentual details of this cooperation are currently being formulated. Theoretically it is possible for Hungarians to accept employment, participate in joint research programs, become lecturers at seminars, etc.

We want to support participation at meetings providing good possibilities for information gathering and personal contacts. Of special importance are the scholarships which are announced and evaluated in a generally known manner. It can be expected that possibilities for special biotechnological scholarships will also be secured, for example through the UNDP.

2473
CSO: 2502/27

HUNGARIAN MEDICOR MODULES WIDELY USED

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 3

[Text] The developers of the Medicor Modular Technology (MMT)--enterprise and university experts--deserved the State Prize last year not only for their concrete achievement but also for the possibilities hiding in the complexity of the microprocessor system. In the meantime an MMT Users' Association has been formed; in it nine enterprises and 27 license owners support or utilize new developmental achievements. Among the devices thus developed the designing system working with AUTER programs and containing a digitizer and photoplotter made by QUEST, which has been running on a TPA-1148 computer at the computer center for several weeks, is worthy of note.

Thus far only the license owners have had access to MMT elements but beginning in January they will gladly accept those buying in small batches. In the future also those desiring larger batches will have to buy a license. The latter has been purchased by a Soviet research institute, and now that it has been put into operation successfully advanced discussions are taking place concerning further joint development aimed at 16 bit technology based on Intel processors.

At the Budapest Technical University, one of the founders of the Association, they are developing, with OMFB [National Technical Development Committee] support, auxiliary elements for a process control system, such as CMOS based processor modules compatible with the Z80. They are also preparing special interfaces here, which can handle typical analog and digital output and input signals. An interface between the MMT system and IBM PC's offering the possibility of a complete range of computer services will be prepared soon.

Members of the Association have appeared with a number of MMT based products. Radelkis is starting series manufacture of an OH 860 model X-Y graphic plotter and microprocessor pH meters and ion analyzers. The MMT is continually used in a number of medical electronics and other products of Medicor, in an automatic haematology device and in the newest members of the alphanumeric and graphic small printer family. Depending on its construction the MX 40 equipment costs 6,000-18,000 forints, so the little machine, with serial and parallel interface, control card, point matrix and a speed of 80 characters per second alphanumeric or 40 characters per second graphic, is truly unparalleled on the domestic market. The MOD 81 computer has been supplied with a 27 M byte Winchester, so it has become possible to develop larger information systems, such as the one that can be seen at the Szekszard hospital.

8984
CSO: 2500/20

NEW HUNGARIAN COMPUTER PRODUCTS

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 4

[Text] Intelligent Drafting Machine
The KFKI [Central Physics Research Institute] developed the EPA 207 model drum type plotter but it is manufactured and sold by the IMI (Industrial Instruments Factory, Iklad). It has a resolution of 0.1 mm, a maximum drafting speed of 50 mm/s and a reset precision of about 0.0125 mm. The device, which can be delivered in two versions, contains a built-in microprocessor in the so-called intelligent version, which can draw some characters, circles and ellipses independently. A unique program produces Hungarian accented characters. Software controls selection and movement of the two pens. The user can also define optional characters. The plotter is connected to a computer through a standard RS 232C (V. 24) interface. The simpler version of the device must be coupled with the computer in a custom fashion. Both versions use 420 mm, edge perforated, single copy fanfold paper. The price of the intelligent drafting machine is 205,000 forints; the simpler version costs 185,000 forints. In the first half year they sold 30 IMI drafting machines.

Peripheral Matching System
With the aid of the peripheral matching system (one interface card, two program packages and video cable) developed by the Data Manager Computer Technology Small Cooperative a video recorder can be used as a streamer for IBM PC/XT and AT compatible personal computers. In about 12 minutes one can save the entire contents of a 10 M byte hard disk store to a remote controlled device using a VHS play-record system. When transferring files the recording or loading takes about 10-15 percent more time. The so-called Backup package controls the save, compares the content of disk and cassette, and reloads the contents of the videocassette to disk. The functions of the File-server program package are: designating and creating directories on the cassette; reading and listing; designating the files to be written to cassette and recording them in the directory on cassette; and reading files from the directory. The guide price for the system is 60,000 forints; it will appear as a product this year.

300 Baud Acoustic Modem

The Coopinform Computer Technology and Organization Subsidiary has developed a 300 baud, duplex mode, acoustic connection modem. After testing by the Post Office and signing a contract with a manufacturing enterprise the device is expected to be in small series manufacture and for sale in the first quarter of 1987. The advantage of an acoustic modem is that two distant computers with an RS-232 interface can be connected together through a switching telephone line without a galvanic connection. The guide price for a pair of modems is about 20,000 forints.

IBM Compatible Data Saver

With the aid of the Datasaver-16 videocassette recorder control system one can set up continual operation magnetic cassette store (streamer) functions by connecting an existing VHS system video recorder to an IBM PC/XT or AT compatible personal computer. The parts of the peripheral control are: the program providing the connection (VIRECO), a control card and a video cable. The menu operated program can be loaded into the computer from a floppy disk. Following testing of the control card the system records the information to be saved on four bands. The guide price for the Datasaver-16, which will be marketed by the Controll Small Cooperative in the near future, is about 100,000 forints.

Graphics Package

The SCI-L [Computer Technology Informatics Development Subsidiary of the Computer Technology Research Institute and Innovation Center] and Softinvest are selling a development system called GRATIS (Graphic Database Management and Designing Interactive Software) which provides all services for graphic designing at the 2D and 3D line drawing and plane model level. One of the features of the software is that the objects and their images are drawn from a hierarchic database, so one can change the part of the image depicted simply by changing the object describing it. They have developed two hardware configurations for GRATIS, a so-called minimal and a so-called professional hardware configuration. The former is based on a Proper-16/W computer and the latter on a Proper-16/G computer (expanded with a high resolution graphics card with an intelligent graphics processor). Systems with basic graphics software can be ordered beginning the fourth quarter of this year and systems with the complete GRATIS can be ordered beginning the second quarter of 1987.

8984
CSO: 2502/20

HUNGARIAN Z8000 MICROCOMPUTER DEVELOPED, MANUFACTURED

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 6

[Letter to editor from Istvan Horvath, director of Electronics Subsidiary of the Labor Instrument Industry Works]

[Text] Dear Editors:
There was an article in issue No 2, 1986, of your paper by Peter Broczko titled "The 16 and 32 Bit Microcomputers." The article provided us also with new and useful information about the domestic and socialist market for non-IBM-compatible microcomputers.

But I would like to supplement as follows the part of the article dealing with Z8000 processors.

Our enterprise, the Electronics Subsidiary of the Labor Instrument Industry Works, has been dealing with the development of Z8000 based microcomputers since 1984 and with manufacture of them since 1985. The system can be used advantageously to control the computer tasks of industrial processes. We delivered several of the computers in different hardware configurations for the reconstruction of blocks 1 and 2 of the Paks Nuclear Power Plant Enterprise. At present a system is being installed for the Hungarian Electric Works Trust. We showed the system at this year's Budapest International Fair and it figures in the catalog with its chief data.

8984
CSO: 2502/20

BREAKDOWN, INCOME OF HUNGARIAN COMPUTER PERSONNEL

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 6

[Article by Mrs Andras Sulok: "Employment and Income"]

[Text] A change in certain computer technology occupations took place in our country at the end of the 1970's. The number of process organizers, programmers, computer technology technicians and data recorders decreased. In 1981 a few computer technology jobs were transferred to other categories.

A year later the number of employees increased to a small degree, partly due to the fact that following the reorganization experts obtained jobs suiting their special training and were listed accordingly.

The formation and operation of the small organizations for computer technology began in 1982. But the effect of the VGM's [enterprise economic work associations], PJT's [civil law associations] and GMK's [economic work associations] on the development of the professional occupation structure was not entirely unambiguous since those working in these organizations were primarily experts already employed at other organizations working overtime. The opportunities for undertaking overtime work broadened in some trades--programmers, computer technicians, microcomputer data recorders, etc. In 1985 the number of enterprises, cooperatives and other economic organizations employing 75 percent of the computer technology experts was 3,056 [as published; 356 may have been intended]. The number of domestic associations (VGM, PJT, GMK) and small cooperatives performing computer technology activity exceeded 1,700, but here one could find only 25 percent of the experts. The expansion of the market for program products also created further opportunities and suitable conditions for employing (perhaps on overtime) those working in these trades.

The total number working in the profession, not equal to the total of the personnel of the various organizations but taking into consideration part-time employment, was 25,500 in 1984, 26,972 in 1985 and is expected to be 31,000 in 1990.

In the accompanying figure one can follow the development of average gross income. The incomes shown in the figure include the income tax.

Development of Average Gross Incomes of Those Employed in Computer Technology

Category of employment	1982	1983	1984	1985	1986 (projected)
Enterprise, cooperative and budgetary instit.	20,047	20,891	21,694	21,662	22,000
VGM	539	1,848	3,565	5,734	5,500
Small enterprise and small cooperative	93	271	1,210	2,510	4,500
PJT and GMK	--	--	5,275	5,613	5,600

Development of Number of Those Employed in the Profession 1982-1986

Category of employment	1982	1983	1984	1985	1986 (projected)
Enterprise, cooperative and budgetary instit.	5,003	5,251	5,886	7,300	8,300
VGM	3,165	3,890	3,780	3,500	3,900
Small enterprise and small cooperative	4,770	6,910	7,710	11,400	13,000
PJT and GMK	--	--	5,040	7,430	8,300*

*[The figure published in the bar graph was 3,165 but the height of the bar approximately coincided with that for enterprises, etc., so that figure, 8,300, is repeated in the translation.]

8984
CSO: 2502/20

NEW DIRECTOR OF HUNGARY'S LARGEST ELECTRONICS FIRM INTERVIEWED

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 7

[Interview with Janos Kazsmer, director general of the Videoton Electronics Enterprise, by Janos Andor Vertes: "The Eighth Engineer." The passages in parentheses are not parts of the interview as such and were originally printed in red, besides being in parentheses.]

[Text] (Since August a new director general has guided our country's largest electronics enterprise. The change gives cause and opportunity for analysis. It would be worthwhile to sum up the Papp age at Videoton, the course stretching from the Hunters' Cartridge Factory through the manufacture of bumble bee motors to computer technology. One could write about the generation the members of which rode favorable winds into the chair of the director general. What was their secret that they were able to navigate despite the changing weather without steering the ship onto a reef but rather into port? And there is another intriguing question, Where in this past did the future hide?)

(Janos Kazsmer, the new director general of the Videoton Electronics Enterprise, came to the Hunters' Cartridge Factory in 1956. When he got his diploma in Miskolc he got on the train at night and the next day applied at the employment office of the giant factory, employing 2,000 people. He was their eighth engineer. He showed his diploma proudly, but they shoved it aside.)

("They might at least have taken a glance at its color," he says disappointedly, 30 years later, "they held the result of 5 years of hard work in their hands!")

[Question] Hmm, hard work. Is this important? They say that the new director general checked on who was leaving the enterprise during work time, when and on what pretext, who was loafing among the buildings, when and where, and as a result of a sampling procedure calculated that the loafing represents a shortage of 400 men per day. Is the new boss so strict? Is the rumor true?

[Answer] Yes, it is true. I would add that I do not want to bring the loafers to account, but rather their bosses, if anybody. The goal was to see clearly. These are resources. Four hundred people, as they say, is not nothing.

Productivity at Videoton is not bad compared to the Hungarian average--this is generally known. But it is only a half or a third of what they find farther west from here. I know that to make up this lag it is not enough to question those leaving. But it is necessary. Only in this way can one create a moral, and economic, foundation.

(For 3 months, as the eighth engineer, Janos Kazsmer loafed around the factory. He did not get any work. Then somebody got sick or went on leave--this is not really important from the viewpoint of the story--and the eighth engineer completed the unfinished work left on his desk.)

(If I ask him about his disappointments he always remembers those 3 months when he did not get any work. If we are talking about the last 3 decades of Videoton, he mentions two faltering times when there was little work.)

[Question] Do you feel comfortable as director general?

[Answer] Yes, at last I have a lot to do. I know that when a new director general is interviewed they always expect some sort of program statement. Well, I do not believe that I should promise a dramatic change. What should change? The enterprise is developing dynamically. Its results can be called good in absolute value too. Should one make changes? I believe it will be a big enough job to guard the success! It is true that this will not happen without technical renewal, and this will require industrial policy and economic policy renewal as well--even if I have to debate this with very many of my colleagues or superiors.

[Question] Why should this be debated? I, for example, have not met anyone who did not feel this way!

[Answer] Only they mean something else by it. One of our famous economists, for example, said at a conference that economicalness is not a question of series size but rather of technology. Foolishness. A man who says that has no experience in technological questions. One cannot make a modern mechatronic element on a traditional lathe, one needs a modern NC or CNC machine. The price of such a machine is ten times or many times that of a traditional one. What follows from this, in regard to economicalness? That if the product is to be a paying one then the series size must be at least ten times greater. But then series size beats its head against the market limitations. So there is a need for industrial policy and economic policy renewal in the background for technical renewal; an enterprise the size of Videoton cannot guarantee itself a market by itself, it needs the help of the guiding organs. The countries with developed economies might prove this.

[Question] Market? There are many who are asking the guiding organs for resources instead.

[Answer] Contrary to the many I do not believe that there is no money, no resources. One would need five times as much capital in Hungary to produce as many finished products as in "capitalist" states with greater capital. In reality the mechanism realizes the regrouping of resources over too long a term; the principle of fairness does not make possible the rational decision

that instead of helping the bad the good should be made better. The society is not prepared for such resource allocation. That is why we are asking for markets. This could mean quotas too, but could mean interstate contacts which favor export and block discrimination and protectionism.

(Today people seem to prefer having an economist lead an enterprise, rather than a technical expert. If someone once studied a trade, graduated from a technical or scientific university, he does not mention this as a leader; a paper earned at some evening university, economics information gathered here and there, receive greater emphasis. Janos Kazsmer wanted to be an electrical engineer, but at the beginning of the 1950's further study did not entirely depend on what a person would like. His choices were to go to the Miskolc technical university, or not go. He went. And at a distance of 30 years he still lists with gratitude the names of the teachers who had the talent and heart for teaching, who could make a mechanical engineer out of a child who, at 10 years of age, was engaged in series manufacture of crystal sets. And as a mechanical engineer he went to Fehervar to engage in series manufacture of people's radios and world receivers. Now he is director general. Where is the mechanical engineering now? Indeed, where is the study of electricity?)

[Answer] I believe it is not bad for a person to have a technical breaking in. He better feels the objectified essence.

[Question] What is the essence?

[Answer] The essence? The essence is that we be able to produce a product which can be sold on the market, which means a suitable foundation for our life from this point on. And by this I do not mean only the future of the people, those working at Videoton, but rather the future of the enterprise as well.

[Question] And do you see this future? We hear about robotics, bureautics,...

[Answer] The present state of the national economy does not reward dynamic development. But we have a strategy. We have talked already about the necessary industrial policy, economic policy renewal, and the means for this within the fatory gates, technical and personnel renewal. Robotics? Bureautics? Fashionable words. I would rather say that we must diffuse our computer technology knowledge into the industrial sphere, and into the office sphere. We are working on both themes.

(We are working. One could end with this sentence the portrait of a man who has no bad memories in life, except of when he could not work.

(But there is something else important which Janos Kazsmer said, and which is now perhaps more timely than 5 years ago, when he might have said it. There is no precise date because I have preserved on tape a conversation from which I ultimately did not prepare a written interview. The theme was the contrast between hierarchic and cooperative guidance, the Academy speech by Tibor Vamos, which had such an effect. And Janos Kazsmer, who was then a factory director, not perhaps the eighth engineer but possibly the eighth leader at the enterprise--if we start listing with the director general, continue with

his deputies and bring in the decision makers of the enterprise quadrangle--spoke as follows about cooperative leadership, and about hiearchy.)

[Janos Kazsmer's earlier statement] The Apollo program is a classical example. It simply could not have been carried out in a hierarchic system. Computer technology is such an area also. Even the development and manufacture of a computer do not tolerate hierarchy, but the contradiction does not come out so sharply here as it does in applications. The rational and clever use of a computer protects cooperative systems rather than hierarchies. But we are used to hierarchies, as thousand year old tradition. This explains why it is difficult to fit computer technology methods into our world. In the present phase of the development of mankind hierarchy prevails not only as a tradition, in some areas it cannot be replaced with anything else. Discipline for example, or education. And there are a number of legal problems, such as labor law. And there is another side, man. The hierarchy protects the existence of the individual. In cooperative leadership the individual is democratized; there is no "I said," "I decided." The higher the level a leader is at the more difficult it is for him to accept that.

(Janos Kazsmer is at the top of a hierarchy, an enterprise of 20,000 people. Thanks to his technical breaking in he remembers everything about the path leading here. Everything, that is the essence.)

8984
CSO: 2502/20

HUNGARIAN OFFICIAL PREDICTS VAST GROWTH OF INFORMATION SECTOR

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 8

[Interview with Lajos Varga, chief of Computer Technology Applications Main Department of the Central Statistics Office, by Janos Andor Vertes: "Plans, Hopes... Needs"]

[Text] When I suggested to Lajos Varga, chief of the Computer Technology Applications Main Department of the KSH [Central Statistics Office], that we talk about the 5-year plan of the branch he stopped me, "Forget the plan, let's talk about the use of computer technology instead."

[Question] But that is what I meant, the 5-year plan for the use of computer technology.

[Answer] If there were such a plan I would not bore your readers with it, because plans always smell of paper, of distant things. If there were such a plan then the national economic plan would have a chapter on it, the branch plan would be prepared from it, which the enterprises and institutions belonging to the branch would break down into their own plan figures. But as I said, there is no such thing. There is material bearing the title "Development of Computer Technology Applications During the Seventh 5-Year Plan," but this is simply a conception; it orients, analyses, shows directions, indicates trends, but it is not a law. Of course, the fact that we released the material for debate, that the Janos Neumann Computer Sciences Society took note of it and that it was discussed at an expanded session of the Computer Technology Applications Council has had an indirect influence in the interest of meeting the expected trends.

[Question] If we look at it this way then I am glad to forget the word plan, because what I really wanted to ask about was the present status of applications and the trends and expected tendencies deriving from this. As I understand it circa 20,000 computers are operating at the managing organizations. In connection with this measure of the computer situation let me ask, Is this good for us or bad?

[Answer] First, a refutation. The figure 20,000 was the closing figure for 1985, the figure will be at least 30,000 by the end of this year. Let me not add, "in accordance with our plans." Is this good or bad for us? We don't have

to qualify this situation, we have to accomodate to it. Five years ago there were hardly more than a thousand computers, and a few experts for them. Since then not only has the number of machines increased, the number of institutions and people involved with computer technology has increased also. The changes, of course, have reordered the needs as well. It is in vain to have ESZR [Uniform Computer Technology System] equipment on the supply side if the customers are looking for microcomputers. It is in vain that we do not offer "home" computers for enterprise applications if a Commodore-64 can be obtained cheaply and freely. At first the firms do not know what they can use microcomputers for, when they find out then it turns out that the capabilities of the machine chosen are insufficient for the task. This is bad. But it is something that more and more people are asking themselves these two questions, and it is good that more and more people are capable of measuring the tasks and the tools for them. And an analysis of the situation shows that the dynamic, rocketing development is not behind us, the better part of it is still before us.

[Question] The conception material illustrates these expectations with a few figures. Even if these are not "plan numbers" but rather "trend numbers" let us take a look at one of them. According to the material the managing organizations with legal entity status will have 160,000 microcomputers by 1990. What is the basis for this estimate? Does the rate of growth for microcomputers--270, 352, 1,288, 3,257, 8,120, 17,000--give this sort of curve?

Development of Number of Computers at Managing Organizations With Legal Entity Status

Year	Microcomputers	Small computers	Medium computers	Large computers
1980	270	693	197	2
1981	352	926	207	3
1982	1,288	1,160	214	3
1983	3,257	1,476	235	6
1984	8,120	2,331	250	7
1985	17,000	2,530	257	9
1986	30,000	2,750	270	11
1990	160,000	7,500	400	45

[Answer] The demand for tools is much more determining than this. If we remove from the extracting, processing and service sectors of the economy the organizations dealing with the management, transformation and distribution of information and those producing the technical conditions for these activities then we get a fourth, so-called information sector, which is organized or is being organized to satisfy the information needs of the economy and of society. It can be established that beginning in the 1980's the information workers in Hungary will constitute the most numerous group of the labor force, or--to use the concept we just defined--every third employee will work in the fourth sector.

[Question] With what? Because the quantity of tools does not even approach this ratio.

[Answer] This is just why we are so daring in our predictions. The infrastructural base of the information economy is the computer and telecommunications. The automation of material and routine activities is a law-like thing, and it follows from this that there will be a further increase in the number of those who are not directly involved with the production of material goods but rather with information connected with it, with the formulation and transmission of information.

[Question] As one of those involved with the formulation and transmission of information I do not doubt the demand for appropriate information processing tools. But there are quite a few in this country who emphasize the limited possibilities, despite the plan based on needs.

[Answer] At the beginning of the Sixth 5-Year Plan we were afraid to write down that by 1985 the gross value of computers might reach 20 billion forints. By the end of the plan period the gross value had gone over 30 billion forints! Need is a great master! The national economy needs these tools even if it requires a certain reordering of resources. When the experts first saw the daring numbers the domestic computer manufacturers were stunned. Who is capable of producing so many PC's and PPC's [professional personal computers]? We cannot undertake to do so! Who asked us to? This is the predicted demand, not a task plan. Those who do not feel in themselves sufficient ability or possibility to react to this demand with supply, no one will force them to it. But I am convinced that by the end of 1990 this inventory of tools will be in the hands of the managing organizations, from some source.

[Question] Because of the nature of the prediction, starting from needs, one can calculate with freedom of movement, with a self-organization of the market. Now, at the end of the first year of the forecast, there have been government level decisions regarding organization of domestic PPC supply. How will these measures affect the picture of the future?

[Answer] Our applications conception does not contain ideas pertaining to manufacture or import. Outlining the future does not rule out that there may be central measures in the interest of realization. Nor is Hungary the only country in which the state takes coordinated steps in the interest of a quicker realization of certain goals. It is another question that in the past 5 years the computer technology applications branch outgrew the central development program. It is difficult to keep this most varied group of professions--influencing the most varied areas of society and the economy--within limits, it can hardly be guided with interventions as exceptions. As for the decision pertaining to PPC supply, we do not believe that this will change the trends or make the validity of the material questionable.

[Question] So at the end of its first year there is hope that the Seventh 5-Year Plan will be fulfilled?

[Answer] We were not talking about a plan!

8984
CSO: 2502/20

HUNGARIAN, FRG SOFTWARE TRAFFIC NOTED

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 9

[Interview with Miklos Lohonyai, leader of the software contracting office of the Interag joint stock company, by Gitta Takacs: "In Foreign Waters"]

[Text] Year after the year the number of domestic software exporters increases and our convertible accounting software export increases by 30-40 percent. Last year the foreign exchange income from this approached 8 million dollars, with a very favorable yield index. Hearing these data or reading about the foreign career of a few of our famous software products domestic public opinion is inclined to magnify the achievements several times, not infrequently imagining our country as a software power. Professionals, however, also sense the "catches" in the ascending graph--the "slide-in deals" so often used to get business, the contracts signed at half price, the painful lack of modern hardware and software development tools here at home, the scattering of programming capacity and the confusing interest relationships. What sort of experiences has the Hungarian manager of a foreign partner firm had concerning Hungarian software export?

We interviewed Miklos Lohanyai (43 years old) who, for more than 6 years including one year as preparation, was project manager and then chief of the firm for the SSG Software-Service GmbH, working in the FRG primarily with Hungarian subcontractors. Since October he has been leading the software contracting office of the Interag joint stock company.

[Question] From the end of 1979 to the end of 1985 you managed or led the undertakings of the SSG Software-Service GmbH in Western European countries. How did the market situation and the Hungarian business of the SSG develop in those years?

[Answer] They were not easy years. The period 1980-84 is mentioned in the FRG as the years of "zero growth." The average increase in the gross social product did not reach even one percent, and they recorded a decrease in 1981-82. The mark deteriorated in comparison to the dollar, the interest rate on medium term bank credit rose to 10-15 percent, investments decreased and the number of unemployed rose almost three times. The strong economy of the FRG--seeing in computer technology a tool for innovation--reacted quickly to the changes.

What influenced the activity of the SSG primarily was that the minicomputers, in the earlier sense, began to die out, the market for personal computers increased to an incredible degree beginning in 1982, and the entire software market was transformed. The users of large computers ran after their money and continued the software investments they had begun. At the same time such famous firms as Siemens and Triumph-Adler dismissed thousands of their programmers, and they represented new competition on the software market as free-lancers.

Two capital partners founded the SSG Software-Service GmbH in Munich at the end of 1978, primarily for the purpose of developing and trading software for West German customers by bringing in Hungarian subcontractors. (I am speaking now only of that part of the activity of the SSG which pertains to Hungarian software export, I am not talking about the strictly West German activities.) The founders felt it necessary to have a leadership for the firm which knew Hungarian conditions in order to handle this business. In 1980 our sales receipts connected with Hungarian export went up to 1.7 million marks, and then stagnated in the years of the slump. About the middle of 1984 a general upswing of the economy began with an increase in software trade of about 20 percent in those market segments in which we can list the bulk of the jobs which could be done by bringing in Hungarians. In 1985 the SSG could record receipts--2.5 million marks--almost 45 percent greater than a year earlier.

Software market trade in the FRG--meaning pure software--exceeded 5 billion marks in 1985, not counting training, processing done for hire and other related activities. Forty percent of the market is in the hands of the big hardware manufacturers--IBM, Siemens, Nixdorf AG and the like--with another 20 percent in the hands of two dozen large software houses,ten of which have a turnover greater than 50 million marks. The several hundred medium software houses can say that they stand on rather strong legs and have gotten onto the market, this includes the SSG.

The number of software undertakings and consulting offices with a few people comes to about 2,500. Twentyfive percent of the small and medium software houses fail each year, but 4-5 percent more than this are newly formed, so the market movement is great.

We had to get on our feet in this economic environment. In 5 years, during my stay there, we did about 10 million marks worth of software development work bringing in Hungarian subcontractors.

[Question] In which segments of the market is there something for Hungarian software people to look for? Actually, what professional level of jobs did the SSG commission to domestic subcontractors?

[Answer] In the beginning, around 1980, we contracted for simple coding jobs, primarily for small computers, at low calculation prices. The reason for this was partly caution, partly because the programmers lacked a knowledge of the German language. The market transformations forced a quality change. Recently we have been undertaking almost exclusively projectswhich require high

professional knowledge and good language knowledge, most of them projects for large computers.

First of all we worked on development of "individual," "custom made" commercial applications systems (material management, order records, financial applications, etc.). Increasingly we did systems analysis or program design, we undertook consulting and we also designed and developed system programs. Fortunately the Hungarian basic training and software training is good, and it is always possible to get jobs in which the "speciality" of the Hungarian software people, their many-sided abilities and ability to adjust, can be exploited advantageously. It is well known how heterogeneous the domestic computer park is. In foreign undertakings an advantage can be forged from this disadvantage.

We did most of the work with further developed versions of the DOS and OS systems which are well known here at home or with the Siemens BS 2000 operating system; we generally developed conversational systems. We also worked on the IBM compatible 8890 computer family of the Nixdorf firm, using our knowledge of DOS/VS. We also undertook jobs on systems which appear exotic here at home--for example, on an MAI machine under the BOSS operating system in Business Basic, in the CPG language or for an ADABAS database.

We had a number of so-called conversion projects--existing data processing systems had to be converted, supplemented and further developed from a Siemens machine to an IBM machine or vice versa or from UNIVAC to IBM, or programs had to be rewritten from APG to COBOL. We had successful DB/DC conversions, for example we had to switch from Shadow to CICS. There are relatively few Shadow and IDMS experts in the FRG, Honeywell-Bull machines are rare, so there are few experts who understand them, and we exploited this successfully.

Our customers included Nixdorf, Siemens, Honeywell-Bull, IBM, Triump-Adler, MAI Deutschland and other smaller hardware manufacturers, and we worked with the Apple firm on a microcomputer theme. Among the users of large computers we solved tasks for the BMW auto factory, the Puma shoe factory and various industrial plants (breweries, paper factories, electric works, publishers, etc.) not only in the FRG but also in Switzerland, France, Holland and Austria. Relatively rarely but still we did cooperate with some of the rival West German software houses.

[Question] Which Hungarian enterprises figured among the subcontractors of the SSG? Did the migration of domestic experts cause problems?

[Answer] We maintained contact with the Hungarian subcontractors with the foreign trade support of the Interag joint stock company. In the beginning we worked a lot with Comporgan, later the work of the SZAMALK [Computer Technology Applications Enterprise] and the SZKI [Computer Technology Research Institute and Innovation Center] picked up, but we also worked with the software divisions of a number of domestic enterprises, e.g. UTORG [Highway Construction Organizing and Data Processing Association] and Fee Collection, and with cooperatives, small cooperatives and economic work associations.

There is very large movement in Hungarian computer technology too, experts move from one enterprise to another, or to GMK's [ecoomic work associations] or small cooperatives. The large enterprises can hardly hold on to tested workers experienced in export work, so for each project we might have to contact several subcontractors, to put together a team with the necessary know-how, perhaps recruited from a single firm. We have substantially more organizing work, not even to speak of the complexity of harmonizing interests among organizations of different types. Our subcontractors appeared for the SSG represented by Interag, but despite this the SSG also felt these difficulties. At the same time, because of its prime contractor role, the foreign customers, naturally, could sense none of this; this is one of the advantages of the Hungarian management of the SSG.

[Question] There is a frequent and not unfounded charge, which is directed equally at those who make the foreign trade deals and those who undertake the work, that in the majority of cases the Hungarian software people sell their work beneath the price....

[Answer] We also found that at some Hungarian enterprises the calculation base is extraordinarily low to this very day, as it was for Interag in 1980, at the time of the coding jobs. In general what is behind this is that the Hungarian subcontractors reach the actual customers via a long domestic and foreign middleman chain. This hurts the ability to get it organized and the ability to assume responsibility; such tangled contacts do not benefit the cause of domestic software export.

Some shortsighted West German firms sometimes exploit the competition among Hungarian foreign trade enterprises with different perceptions, or among contractors, and bring down the prices. For a serious partner reliability, maintaining good relations and the quality of the work are more important parameters than cost. If one party feels itself constantly exploited in a business relationship it will unavoidably lead to trouble.

From the beginning it was the goal of the SSG to have long term cooperation with Interag and the Hungarian subcontractors, based on mutual trust and proportional interest reflecting the share in the undertaking. For this very reason we deliberately did not seek contacts with other foreign trade enterprises outside of Interag. And Interag not only gives its name to the conduct of business, it also brings business to the Hungarian subcontractors through its fixed partners and manages joint undertakings with expertise.

All this and the high professional level of our projects are shown by the fact that the calculation base in the SSG-Interag relationship has risen about 1.5 times--while the West German software market price level in our typical market segment has risen only slightly in recent years.

If we undertake to solve a task and if we organize the work well then 30-50 percent more foreign exchange can be extracted from the deal than comes from the foreign work of Hungarian software people on the average. This is in the common interest of the SSG, of Interag and of all Hungarian subcontractors. Behind this, however, stands the good reputation of the SSG forged over the

years, its image, and good references. Software development is an activity involving confidence and a software product is a confidence commodity.

[Question] What proportion of the software export of Interag is represented by the undertakings of the SSG, and how big is the part coming from sale of products?

[Answer] Last year convertible accounting software business brought Interag 70 million forints. This year we expect a turnover around 100 million forints. In past years the orders of the SSG made up 60-65 percent of the trade. The ratio of product export last year was about 10 percent; thanks to the success of the new CAD developments this ratio will improve this year, and may reach 15 percent.

[Question] You managed the undertakings of Hungarian software people in Munich and your task here at home is similar. Still, what has this change in environment meant in your work?

[Answer] How should I say it,.. I like to sail. For the past 5-6 years I have had to sail in strong winds, among large, dangerous waves, but on a large body of water which could be easily surveyed. Now the wind is weaker, the waves are calmer, but it is more difficult to calculate the direction of the wind, there are reefs and whirlpools in the water, as is usual in small bodies of water. One can sail well there and here, but one must maneuver differently and watch for different things. I learned to sail on small bodies of water, and although there have been many changes in the domestic waters in the past 5-6 years, resuming my place cannot cause, will not cause difficulty.

Development of Convertible Accounting Hungarian Software Export (in millions of forints)

1980	1981	1982	1983*	1984	1985
128.5	151.2	179.8	154.0	266.7	385.6

* Beginning 1 January 1983 the foreign trade statistics are listed according to the register of machine data processing products. The export drop shown for 1983 can be attributed to the change in accounting method; it is probable that actual export increased relative to the preceding year.

8984
CSO: 2502/20

HUNGARY'S 99.99 PERCENT PURE GALLIUM

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 16

[Interview with Istvan Voros, director of the Hungarian Aluminum Industry Trust, by K. M.: "There is Little Arsenic"]

[Text] In contrast to the world market price for gallium of about 400 dollars per kilo one can get orders of magnitude more for a kilo of gallium arsenide monocrystal. So why have we chosen the former path, we asked Istvan Voros, director of the Hungarian Aluminum Industry Trust.

[Answer] A number of things are needed at once for a gallium arsenide wafer--high purity gallium and arsenic, peak technology, well trained personnel and a market, not buying and selling contacts but rather complex technical-economic contacts. And the gallium arsenide wafer can be embodied only in a device.

[Question] How do we stand with the components mentioned?

[Answer] We have no arsenic; indeed, we could not get enough from the CEMA countries.

It exists in many places in the form of waste, but extracting and purifying it, which requires a technology much more complicated than with gallium, have not been solved. As for the wafer manufacturing technology, this requires expertise similar to that for silicon.

[Question] So that leaves gallium, for if there is no wafer then the market contacts are not a question.

[Answer] At the Ajka alumina factory we produce high purity gallium, four nine gallium in professional parlance, that is 99.99 percent pure. This is a commercial product in demand by capitalist users. We could also produce better quality than this, six nine quality (99.9999 percent pure). But this is a complicated task because there are as many needs as users; that is, the amount of the remnant impurity is not a matter of indifference. But the users, and here I am thinking of the capitalist countries representing our chief markets, do not betray in such detail what their needs are; they would rather take the less pure and purify it themselves. Our technology for producing the

better quality is already perfect, but we cannot sell the six nine while there is no problem with the four nine.

[Question] How much of this high purity gallium can be sold with no problems?

[Answer] Our production this year of 3,800 kilograms represents 10 percent of the total production of the world. Of this a total of 10 kilograms remains here at home; this amount is the domestic need, primarily for research purposes. At a price of 420 dollars per kilo it belongs to the profitable branches of the Trust.

[Question] If this is so then why do you not purify and sell more? It is said that at least two thirds of the gallium remains in the alumina.

[Answer] This is how the demand for gallium has increased in the past few years. For example, gallium production started at Ajka in 1959. We got more per kilogram for this metal which was used for different purposes then of course--dentistry, thermometers, etc.--than we got for gold. Then there was a slump for many years, for nearly two decades.

[Question] Do you plan to expand?

[Answer] In July we submitted our credit request to the bank, and asked for export support from the interministry committee to create a manufacturing base for 3,000 kilograms per year. If these are not rejected then the expansion will be ready within a year and a half of signing the contracts. We would be capable of more too; each year about 12-15 tons of gallium could be produced economically in our country, but one should not forget that they will be expanding elsewhere in the meantime. In this way production might be increased ten times in the alumina factories of the world.

8984
CSO: 2502/20

ACHIEVEMENTS, PLANS IN HUNGARIAN GALLIUM ARSENIDE TECHNOLOGY NOTED

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 17

[Article by Katalin Magos: "Peak Technology from Ujpest"]

[Excerpt] Our annual production of gallium is 2-3 tons (the total for the world is 50-60 tons per year) but it could be considerably more, almost twice as much as this remains in the alumina. We export the larger part of what is produced, for example to Japan, at a price around 400 dollars per kilo. Processed, however, the semiconductor crystals made from it would sell for 30,000 dollars.

We might say that it has to be this way, for we are unable to process it. But this is not so. The development of compound semiconductors, including those based on gallium, has a tradition of more than 10 years at the Technical Physics Research Institute (MFKI) of the Hungarian Academy of Sciences.

Antecedents

The threads go far back. In 1972 the Telecommunications Research Institute, manufacturing microwave rebroadcasting stations, had a need for Hungarian devices to replace the uncertain import. The MFKI researchers started on the basis of the Gunn phenomenon discovered in 1964 when preparing a microwave signal source. According to this electrons move more slowy under the influence of a large electric field strength than they do under the influence of a small one. The special band structure necessary for this is a peculiarity of gallium arsenide. After developing a Gunn diode requiring small operating voltage and suitable for signal generation they developed, in 1978, Schottky diodes detecting microwaves and used for mixing. And then the problems began--hardly a dozen of the latter and only half as many of the former are needed at a microwave rebroadcasting station. This would have meant that every 10 years they would need only one of the wafers obtained at the end of a complex technological line, because several thousand elements can be made from one wafer.

The researchers then began serious market research, and found a number of possible uses for their microwave semiconductor devices. Today the institute embraces a full innovation chain in this area, ranging from epitaxial growth of gallium arsenide layers through production of active microwave semiconductor parts to development of simpler devices, not primarily used for

communications engineering purposes. And all this is thanks to guided basic research, research aimed at laying the foundations.

Of course we certainly cannot be satisfied. During the preceding 5-year plan a significant development of electronic elements based on gallium arsenide figured in two National Medium-Range Research and Development Plan programs. The goals originally put forward, however, were not met in every case due to the frustration of investment programs. For example, the gallium arsenide monocrystal laboratory was not set up; with an annual capacity of 50-100 kilograms it would have supplied every domestic development. They did not succeed in setting up an electronlithographic laboratory which would have provided a submicron photolithographic background for starting a high frequency gallium arsenide IC program, nor do we yet have the planned medium energy ion implantation equipment.

The Superlattice

The biggest achievement is that the researchers of the institute did develop a liquid epitaxial superlattice technology which is competitive with the peak technologies used in developed capitalist countries. The superlattice can be produced by periodic "building together" of thin layers of various compound semiconducting materials. The superlattice consists of 50-100 very thin layers, 10-20 nanometers thick, in which new physical phenomena arise. The importance of this, in addition to its practical importance, is shown by the fact that the results achieved in research on such structures were awarded the Nobel Prize in physics in 1985 and two Hewlett-Packard prizes in the past 4 years.

The superlattice laser diodes suitable for optoelectronic purposes differ radically from the double heteroepitaxial types. Their life expectancy is many times greater, their radiating output is greater by an order of magnitude, their radiating wavelengths can be tuned by layer thickness and their radiating and coherence properties are better.

If we add to all this that superlattice structures were used to produce the world's most powerful semiconductor laser diode and its most sensitive photodetector, the results of which can be felt already in laser xerography, astronomy and other areas of science and technology, then there can be doubt that our researchers, who have already produced equipment representing peak technology, should go further on the road begun.

Superlattices, which cannot be purchased because of the embargo, can be produced with the experimental equipment at Ujpest. It is not only this which draws the researchers of developed countries to Ujpest, but also the fact that the value of the equipment is around 40,000 dollars compared to the 2 million dollar versions used by them. The equipment, a domestic development in its entirety, offers only the medium output of its foreign competitors, but more is not needed for industrial applications, only for research purposes.

Of course this is not miracle or mystification, but a different crystal growth; with the procedures developed elsewhere they start from the gas phase when growing a crystal, but in the Hungarian equipment the semiconducting layers are deposited starting from a metal melt.

And last but not least, they have succeeded in producing the first samples of pulse and continuous operating gallium arsenide laser diodes coupled to an optical fiber, indispensable for optical telecommunications.

Further Plans

Taking into consideration the above positive and negative results of the Sixth 5-Year Plan their plans for the present plan cycle were formulated on the basis of realities. The development of gallium arsenide based microelectronic parts is part of two OKKFT [National Medium-Range Research and Development Plan] programs. According to these they should work primarily on optoelectronics research and development and secondarily on keeping up the production of the discrete gallium arsenide devices which have been developed (various diodes).

The great majority of optoelectronic elements have a diode structure; the special equipment needed for the wafer technology for these exists at the institute; the other elements of the technological line can be found in a number of places in the country and could be brought to bear.

By concentrating on optoelectronics it seems possible to develop, for example, 1.3 micron optical communications diodes, costing 2,000 dollars each.

Direct industrial utility supports this also. The semiconducting laser diodes could be used in the optical communications systems of the Telephone Factory, in the fast xerographic printers of Videoton and in laser disk units. It is probable that new needs will arise during the present 5-year plan, for example the existence of various sensors (photodetectors, etc.) will be a key question in robotics, in environmental protection and in machine industry automation. The development of these is also justified because 1.3-1.5 micron optical communication also requires non-silicon based photodetectors, and the wafer and device technology used requires identical or very similar operations and technological lines.

8984
CSO: 2502/20

COMPARISON OF HUNGARIAN MULTIWORKPLACE SYSTEMS DEVIATING FROM IBM PC LINE

Budapest COMPUTERWORLD-SZAMITASTECHNIKA in Hungarian No 4, 10 Dec 86 p 27

[Article by Attila Kovacs: "Selection of Multiworkplace Microcomputers"]

[Excerpt] The accompanying table is suitable for a comparison of seven multiworkplace microcomputers according to their chief characteristics. The data, as of October 1986, are for orientation purposes and come from the vendors.

A Comparison of Multiworkplace Computers Deviating From the IBM PC Line

Name/ Vendor	Processor Type	Operat. System	Number Workpl.	RAM (M byte)	Hard Disk (M byte)	Data Manag.	Small Config. & Price	Notes
Alpha-Micro AM-1041W /SZUV	WD16 process. unit	AMOS	1-7	256-512 K bytes	32-- 2 x 32	--	4 wp. 256 K RAM 32 M hd streamer printer about 1.5 M ft.	Video tape, 20 M stream-er
East-star/ Instrument Technology Coop.	Multi-process. 80286 8088	Con-current DOS	2-20	1.2-2.5	2 x 27 100	MBase +Plus rela-tional	2 wp. 8 inter-face 2 x 27 M hd. 1.2 M floppy 1.8 M ft.	10 or 25 M stream-er

Name/ Vendor	Processor Type	Operat. System	Number Workpl.	RAM (M byte)	Hard Disk (M byte)	Data Manag.	Small Config. & Price	Notes
Rair Super-Micro /5G	80286 80287	Concurrent DOS 4.12, UNIX compatible	8-16	512 K-1 M (4 M UNIX compatible)	50 2 x 50	Dataflex	8 wp. 1 M RAM 50 M hd. streamer mag.tape unit printer 5.66 M ft.	Wyse-50 pict. screen terminals, Dataflex 125 t, 45 M streamer
Professor/ Csepel Electronic	68000 or 68010	IDRIS, UNIX compatible	1-8	512 K 16 M	18 expandable to 330	Informix	4 wp. 1 M RAM 18 M hd 1 M fl. streamer about 2.5 M forints	Multiprocessor (VME bus) VT-52 VT 100 terminals (e.g., TECO)
Procom-6/ SZKI	16 bit special	RSX-11M compatible	1-16	1-4	20-80	relational	4 wp. 1 M RAM 20 M hd line printer about 3.5 M forints	Basic software in price, SZM 5308 mag.tp. unit
TPA-Quadro /KFKI	AM 2903	COS; Multi OS/Q	1-12	128 K words	20-40	--	5 (wp & printer) 128 K words 20 M hd 2 x 400 K floppy b/w monitor 1.5 M ft.	50, 80 M byte streamer, QVT-100 work places IBM 3270, 2780 emula.

Name/ Vendor	Processor Type	Operat. System	Number Workpl.	RAM (M byte)	Hard Disk (M byte)	Data Manag.	Small Config. & Price	Notes
VT-32/ Videoton	16/32 bit micro-proc.	USOS (UNIX compatible)	1-8	1-4	21 4-21	--	4 wp. 1 M RAM 21 M hd. printer 1.8 M ft.	VME system bus, Ether-net compat-ible inter-face
						VDN (VT-100 compatible) and VDX (VT-220 compatible) workplaces		

[Notes: wp=workplaces, hd=hard disk, fl=floppy, mag tp=magnetic tape unit, SZUV=Computer Technology and Management Organization Enterprise, SZKI=Instrument Technology Research Institute and Innovation Center, KFKI=Central Physics Research Institute, t=thousand forints (price of Dataflex), M ft=million forints, storage in bytes unless otherwise indicated.]

8984
CSO: 2502/20

BRAZILIAN CLAIMS COMPUTER BREAKTHROUGH

PY121345 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 8 Feb 87 p 49

[By Jorge Sappia]

[Text] A missile immune to interference from enemy electronic defense systems would certainly interest military strategists of any country, particularly if its invulnerability is based on minute trajectory guiding silicon chips buried in the heart of a microcomputer in the missile's nose. The interest is indeed so great that in 1986 alone, the Pentagon, which centralizes the activities of national security and military strategy of the U.S. Government, spent nearly $150 million on research into developing software (programs) for intelligence missiles, a deadly byproduct of the fifth generation of computers, known as "intelligent computers."

The technique of recording instruction in the "eprom" memory, developed by Waneck Martins, uses the technical language and Broolean arithmetic utilized in microprogramming (firmware) to tansform data from human language into "sequence of bits" -- the zeroes and ones the computer understands -- which is applied to an algorithm capable of solving the problem proposed in the form of numbers. These "sequences of bits" are reconverted into human languange using the same process. A conventional computer equipped with an Automated Rational Structured Program (PERA) is transformed into a "thinking machine," Waneck Martins asserts. He has the conviction that he has found the formula by which man can interact in a natural and direct fashion with a computer, and to provide Brazil with the tool that neither the Americans, nor the Japanese have been able to build.

Waneck Martins' ideas were tested in the railway signal control circuits of FEPASA [Sao Paulo Railroad, Inc.], an area in which he has worked for 30 years, and in the development of the first intelligent software called "Indian Baby," and which permits metamorphosis of a conventional computer into an "intelligent computer that does not need to be guided." Martins could not go any further. He could not even travel to Japan 2 years ago to demonstrate his theory because no university, government, or military research institution showed interest in his ideas. Although he has discussed them in academic circles and published them in newspapers and magazines, Waneck Martins has not yet found anyone interested enough to discuss with him, in depth, the technical feasibility of transforming ESCAO into the forerunner of intelligent computers. Martins feels that the research institutions would pretend to be deaf before discussing the startling thesis with "someone who does not belong to the club. I am not complaining, but I am criticizing it a bit," he says.

DOMESTIC MANUFACTURERS TO SUE SEI OVER IBM DECISION

Rio de Janeiro DATA NEWS in Portuguese 23 Sep 86 p 10

[Article by Hiroshi Fujii]

[Text] Sao Paulo--Acting through ABICOMP [Brazilian Association of the Computer and Peripherals Industry], three domestic manufacturers--the SID, ELEBRA, and Microlab--may appeal the decision by the Special Secretariat on Informatics [SEI] to authorize IBM to manufacture large-capacity disk drives and computers in the 4381 family at its plant in Sumare, Sao Paulo.

Disagreement with the SEI has been increasing throughout the past week for two reasons. First, the boards of directors of domestic firms feel that they have not been properly heard concerning the way in which IBM should conduct itself under the terms of the Data Processing Law. Second, a list of prices for the various models of the 4381 family in the United States--published by the newspaper COMPUTERWORLD--"is causing too much concern among the manufacturers of domestic minicomputers," because in that price range--$400,000--IBM Models 12 and 13 are presenting too much competition.

According to COMPUTERWORLD, the "suggested price" of the 4381 MG-12 with 8 megabytes is set at $330,000, whereas Model 13, also with 8 megabytes, sells for $440,000. At the SEI, even secretary Jose Rubens Doria Porta acknowledged the possibility that the decision would be appealed.

Mechanisms exist for dealing with any disagreements in relation to approved plans, says the secretary. "An appeal is normal procedure." He also recalled the case involving Filizola, which appealed to CONIN [National Council on Informatics and Automation] because one of its products had not been approved by the SEI as a piece of data processing equipment.

Despite the lone expression of disapproval by Antonio Didier Viana, chairman of Microlab, the firms do not intend to make a decision without ABICOMP's participation. And at the end of last week, ABICOMP's chairman, Antonio Luis Mesquita, agreed to discuss the matter at the board meeting scheduled for this Monday.

Parameters

Besides explicit promises concerning time limits for Brazilianization of the disk subsystem, domestic manufacturers feel that the SEI has acted unsatisfactorily with respect to the marketing parameters to be imposed on IBM. One example is the exact limits placed on the product's performance range, and another is "the tax context in which IBM is going to manufacture the big disks and the computer." Those objections have led to the possibility that IBM will produce its Model 4381 MG-11 only for export "precisely so that its price ($185,000 according to COMPUTERWORLD) will not have a harmful effect on the domestic price of domestic superminicomputers."

The discontent on the part of domestic manufacturers shows that the SEI may have made a mistake in approving IBM's plans "without first consulting domestic industry." And although the matter is still up to CONIN, turning back at this stage would be disastrous. "We can consider the milk half spilt," remarked one source at a Sao Paulo manufacturing firm. But in the opinion of Americo Rodrigues, an assistant in the SEI's Industrial Secretariat, the plan "was fully discussed" and about 30 percent of the market for disks was reserved for domestic firms.

11798
CSO: 3699/26

BRAZILIAN COMPUTER ASSOCIATION FAVORS PROTECTIONISM

Rio de Janeiro DATA NEWS in Portuguese 23 Sep 86 p 5

[Article by Fernando Pereira]

[Text] Rio de Janeiro--The Brazilian Computer Association [SBC] has issued a document criticizing the National Council on Informatics and Automation [CONIN] for approving extension of the copyright system to cover the software law. The SBC warns that the copyright system will open gaps in the national data processing policy and produce a level of competition harmful to domestic service firms.

"We have been advocating a hybrid system of protection for software that is expressed in the bill by Senator Virgilio Tavora," says the SBC's regional secretary, Luis Paulo Vieira Braga. "That bill puts a stop to unauthorized use, but in exchange for that protection, it requires a social quid pro quo in the form of announcement of registration, the supplying of documentation, user's rights, and, chiefly, subordination to Law No 7,232."

Hybrid

The SBC recalls that no country in the world has adopted a pure form of copyright protection for software. Moreover, those countries which have adopted a modified copyright system did so only after consolidating their production of computer programs--examples being France and Japan.

"Software production is moving increasingly from small-scale production to automatic generation," Vieira Braga recalls. "In the very near future, the programmer is going to give way to the 'specifier'--that is, the code will be generated automatically based on the desired specifications for the program. From that perspective, the visible form of an idea will no longer be the program but the listed specifications. As a result, the danger exists that in a shrewd international division of labor, the less developed countries will be left with nothing but code generation, since the specification copyright will be built into the copyright."

Copyrights are regulated by the Bern Convention, which does not require public notification of the registration of every new product coming on the market.

That in itself conflicts with the software marketing regulations approved at the same meeting by CONIN. Without registration, there is a possibility of duplicated investment and of a reduced flow of information. Under the patent system, it is considered that protection given to an inventor for a particular period of time must have its social quid pro quo when the patent enters the public domain. That would not happen with software protected by copyright.

"In our country, 70.9 percent of the programs registered with the SEI [Special Secretariat on Informatics] are foreign," says Vieira Braga. "Besides those, there is a vast quantity of pirated software. National effort in this sector is still modest, and if it is not encouraged, we will have a national data processing community that is frozen out and left to be simply a user of imported products."

11798
CSO: 3699/26

ABICOMP CHAIRMAN ON PROTECTION FOR COMPUTER MARKET

Sao Paulo DADOS E IDEIAS in Portuguese Sep 86 pp 30-31

[Interview with Artur Pereira Nunes, chairman of the Brazilian Association of the Computer and Peripherals Industry, by Tania Coelho; date and place not given; first three paragraphs are DADOS E IDEIAS introduction]

[Text] In the debates over computer policy, the hardware industry is constantly being attacked on the grounds that it is protecting "its" market and evading its responsibility to invest in research and development. That criticism comes precisely as the U.S. Government is making a number of threats concerning Brazilian exports in a concentrated effort to change the Data Processing Law.

In the universities, the problem of manpower is exploding and demanding urgent solutions, since the training of technicians and researchers is one principal means by which Brazil can pursue its coveted technological expertise in data processing. Added to that picture is "piracy," which is obstructing the development of a software industry and weakening investment projects in that area.

In that cross fire, the Brazilian Association of the Computer and Peripherals Industry (ABICOMP) is regarded by some as a focus of resistance to the Reagan administration, while others view it as an agent for the disintegration of the domestic market. Since June, as a member of that body's executive board, Artur Pereira Nunes has been participating actively in the discussion of those issues and of the political problems currently involving the domestic computer industry, with their serious repercussions on national life. And he is not a new participant in the debate, since he was involved in the process of formulating national data processing policy as a member of both CAPRE [Electronic Data Processing Coordination Committee] and the SEI [Special Secretariat on Informatics]. Until last June, he was the SEI's under secretary for services. In this chat with DADOS E IDEIAS, Artur Pereira Nunes tells how he views the highly controversial data processing policy.

DADOS E IDEIAS: Is it possible to establish a relationship between the debate underway in our country concerning data processing policy and the external threats coming from the Reagan administration?

Artur Pereira Nunes: It is impossible to separate one problem from the other. As regards the external issue, which is having immediate repercussions on the domestic issue, there is one problem that is particularly difficult to solve, and it has to do with the international division of labor. What role is going to fall to Brazil's lot in the 21st century? Are we going to specialize in supplying a large volume of cheap labor for the assembly and operating projects of industries being ousted from the developed countries? Is that the course being chosen for us, or are we going to participate equally in the process of appropriating the benefits of technical progress?

DEI: How is this problem being posed most clearly in practice?

APN: The difficulties we face today result from the attempt to break up a protected market for labor, intelligence, and creativity at the international level. That is very difficult to do, and it is not a task exclusively for one industry or even a single segment of industry, much less for visionaries. It is a collective task.

DEI: Does support for that approach depend inevitably on domestic issues?

APN: It does precisely at a time when it is necessary to establish a political alliance and bring together forces committed to this project for breaking up that protected market for intelligence and creative work at the international level. In this process, we are going to find powerful allies and enemies. The powerful allies are the workers, they being the ones who are really going to create and be involved in this process. And we are regularly going to encounter opposition from segments of society closely aligned with the interests of the multinationals.

DEI: Does this mean that those are the big difficulties and that all the others are circumstantial issues?

APN: We must be clear about the fact that in response to the American problem, the least we can assume is that segments committed to national causes will close ranks in defense of our sovereignty, and what that involves today is data processing. Tomorrow it will be the banks, and later it will be the service sector, tourism, transportation, and so on.

DEI: Is that written in the U.S. Trade Act as amended in 1984?

APN: The change in the U.S. Trade Act completely altered the concept of trade, which had previously covered goods or merchandise exclusively. Now the concept includes services and investment. That changes everything. That concept is the basis for all the current objections to the Data Processing Law, and it is certain that after data processing, many other cases are going to arise, and they will lead up a meeting by GATT in Punta del Este.

DEI: So the quarrel is over the inclusion in GATT of so-called services.

APN: Actually, it is over the inclusion of services and investment. All of Brazil's legislation on foreign capital will have to be tinkered with. The

entire policy on preferential purchases for domestic engineering firms will be changed, and the entire banking industry will be called into question. Data processing is actually a training ground for a serious problem we are going to experience by the end of this century. I even believe that the question of data processing is being used to weaken Brazil's position when it goes to negotiate the matter of services at GATT. And if there is not a consistent and firm attitude on the part of the sectors involved, it is not just data processing that is going to disappear. So will everything else that is listed in the U.S. Trade Act, which should be more read and better known than it is.

DEI: They have a law saying that we cannot move in certain directions.

APN: Exactly. And that means that we would have to explain ourselves. We do not elect U.S. congressmen. Disagreements between countries must be resolved through multilateral organizations. It makes no sense that we here should have to go explaining ourselves in response to an American law.

DEI: But there are also domestic objections to implementation of the Data Processing Law.

APN: But that does not mean, as many people would like, that the law is even unconstitutional. The document submitted to the Federal Supreme Court is part of the democratic ritual, which must be respected. But we all know that the law was intensely debated in the National Congress, and anyone with a memory recalls that it was the subject of more amendments than even the Petroleum Law. And it is well to remember that we are in the runup to a National Constituent Assembly, where the entire issue of data processing may be debated again so as to make the changes society considers necessary. We cannot be afraid of democracy. The problem is ideological. The people who opposed the Data Processing Law did so on principle, and those people are currently the minority in society.

DEI: Is a question of principle also being raised internationally?

APN: There the question of principle is one of sovereignty. It is a matter of our country determining the paths it wants to follow in a specific area of knowledge. Paths which a country chooses democratically cannot be challenged by any other nation. The objection that we cannot have a domestic data processing industry may be used in the near future to support the idea that soldiers must be sent to Brazil to deal with the drug traffic or even the idea of sending rockets against Libya.

DEI: In that context, what is the most difficult problem facing the industry today? Coping with external pressures or the fact that we are not really managing to develop domestic technology?

APN: Saying that domestic technology does not exist means admitting that nothing has been done, and that is not true. What we are not in a position to do is to develop domestic technology simultaneously for all applications and for all the problems that need to be solved.

DEI: Changing perspective, then, little has been done in comparison with the commitment made by the industry.

APN: Little has been done in relation to what Brazil is capable of doing. And we do not feel it is correct for us to be told what course to take in developing Brazilian data processing. Within that framework, anything goes.

DEI: As far as the software industry is concerned, for example, it is not fair for the hardware industry to protect its own market and show no concern for the development of domestic data processing...

APN: ...which depends on hardware, technical assistance, training, and also on software. In the United States, the software industry was developed on the basis of hardware. The problem in Brazil is that software has progressed much more slowly than it could have. In our case, the minimum requirement is that there be a legal institutional framework that is clearly defined.

DEI: What is the role and responsibility of businessmen and industry in this process?

APN: First of all, to step firmly into the battle against piracy. ABICOMP is in favor of seeing the legal status of software ownership defined. A serious businessman who makes an investment in software research and development is seriously harmed by piracy. That is why we are committed to debating that question at CONIN [National Council on Informatics and Automation].

DEI: Would it not be necessary for businessmen in the software industry to organize politically, as those in the hardware industry have done?

APN: On this American issue, we have sensed a certain timidity on the part of businessmen involved in software. ABICOMP realizes the dimension of the problem being facing. That is why its chairman went to Paris to make himself available to the Brazilian delegation and deal with any doubts and provide explanations or suggestions. The industry is active; it is not avoiding the difficulties or allowing itself to be intimidated by them. It is not up to me to be handing out advice. Each entity knows what its responsibilities are. What I do observe is a degree of timidity in this important period when clear definitions are needed. There is no doubt that businessmen involved in the production of software will have to work hard, because this period will require firm stands by those who want an independent policy in this area.

DEI: What about manpower?

APN: Organizational work in that area is already underway at one of ABICOMP's member firms that has a research program involving academic centers. This is the start of a process in response to the just demand by the scientific community that industry participate more fully in the training of manpower.

11798
CSO: 3699/26

ASSESPRO CHAIRMAN FAVORS PROTECTIONISM FOR SOFTWARE

Rio de Janeiro DATA NEWS in Portuguese 14 Oct 86 pp 6-9

[Article by Alexandre Lello Machado, chairman of the Rio de Janeiro regional branch of the Brazilian Association of Data Processing Service Firms; italicized words indicated by slantlines; first paragraph is DATA NEWS introduction]

[Text] It is necessary at the start to explain the correct concept of data processing: the automatic processing of information. And that is all. That is really the only thing which, electronically, by means of programs and digital signals (bits), can make any kind of machine move toward a specific end (from a blender or a simple doll that cries to the controls of an aircraft, robots, or microcomputers, minicomputers, and main computers).

Article 3 of Law No 7,232/84--the Law on National Data Processing Policy--defines fully and in a technically correct manner what constitutes "data processing activity." There is not /much/ there to criticize.

The fact is that rarely has there arisen in Brazil an issue so controversial and important or one about which people in general--and politicians in particular--know so little. Data processing is something new. It appeared in the world in the 1940's and 1950's. It appeared in Brazil even more recently, and only now are we becoming aware of it.

To understand what data processing is and have an accurate idea of its importance, one needs to read a little more and to think--to try to learn about its effects on the more developed societies and become completely familiar with specific technical concepts related to data and electronics. That in itself is enough to limit to extremely few in Brazil the number of people capable of understanding it.

Moreover, we usually never read the texts of laws, especially when they are concerned with tough subjects we know nothing about. The PNI [National Data Processing Policy] Law is unquestionably an important milestone in the history and development of Brazilian data processing, and we can say that in our country, data processing is already divided into two periods--the one before Law No 7,232/84 and the one /after/ it. Going even further, we can say that

the Data Processing Law was all it took at the proper moment to trigger a vigorous (very controversial) policy in that sector--one that had not existed previously.

Although they could be better, the law and the activities of the Special Secretariat on Informatics [SEI] are not at all bad. The criticisms do not outnumber the good points.

It is even stimulating to know that personal friends of the president of the republic sit in the SEI's waiting rooms like wallflowers as they wait for import permits. There is nothing like it for showing that at last we are professionals.

The action strategy in the National Informatics and Automation Plan (PLANIN) is comprehensive. Besides dealing with the use of data processing, the production of goods and services, research, and the training and deployment of manpower in that sector, it also provides for a broad range of activities to provide incentives, although they are being implemented only with difficulty, mainly because of the rigid mechanisms in government agencies.

In that respect, it is necessary to criticize the ineffectiveness of the SEI and CONIN [National Council on Informatics and Automation] in bringing about implementation of the tax incentives provided for in articles 13 to 15 and article 21 of the PNI Law. It is necessary to hope a little and work a great deal while waiting for the situation to mature and the mechanisms to adjust--so as to put effectively into practice the theory established in the laws, plans, and regulations.

It is believed that few countries in the world possess such a comprehensive and well-balanced master plan for data processing, despite the external and internal pressures which have always made themselves felt and which, as is known, tend to tip the scale painfully in only one direction.

The useful functioning of the best national data processing policy requires not only that the government organizations responsible for its execution act much more democratically but also that there be active participation by society and, in particular, a much more mature attitude on the part of Brazilian businessmen.

Data processing is profitable without a doubt, and it is going to be much more so. Above all else, however, data processing is linked to the quality of the product or service offered. Programs and hardware must be as perfect as possible--otherwise, data processing will also be underdeveloped and the speed of national development will be jeopardized as a result.

Our plans and laws relative to data processing, which politicians are unfamiliar with largely by their own fault, are now beginning to materialize. And because of dictates specific to our land and people as well as foreign interests, that materialization is in a difficult process of formulation. A little patience is needed, and it only exists when one is fully informed and realizes that some time is needed for making the final adjustments.

When it comes to microelectronics, only the United States currently meets the three essential requirements for the development and production of chips: capital, accumulated knowledge, and a market to absorb large-scale production, and that is the truth.

But we satisfy a fourth requirement: raw materials. Why are we not exploiting them? The next step is to absorb foreign technology voraciously, and that cannot be done by opening our borders to investments and firms from other countries. It can only be done by establishing an intelligently protected market (there is no reason to avoid the expression) that will allow the entry of nondomestic products in a way that will permit and stimulate our own private initiative rather than stifling it. It is difficult to establish such a tenuous balance.

The concept of domestic enterprise as laid down in article 12 of Law No 7,232/84 is not all that rigid, nor does it make the existence of partnerships between firms impossible. There are countries which have established much more rigorous and restrictive principles.

What we are seeing today is mainly just the start of a long, far-reaching, and resounding internal and external political battle. It is to be hoped that the results will be those best for the country. We would say that some basic rules have been established and that only now has the whistle sounded for the game to begin. Everything that went before was just a kind of basic preparation, with the field and equipment being put in shape and the athletes warming up.

The basic law and the master plan have been published (and if the politicians would simply get in the habit of reading the DIARIO OFICIAL, they would be more familiar with them). We are currently concentrating on one basic aspect which also remains to be regulated: software and its concepts, its legal definition, and guidelines for its production, marketing, and, chiefly, importation--the heart of the matter.

Software is so important in data processing that we are not yet aware of its magnitude, and that, to a certain extent, makes its regulation through rigid laws a precarious undertaking. Already being produced are computer programs going beyond the principles and concepts previously known, an example being those that operate in the area of artificial intelligence.

Computer programs are not protected by copyright or by patents--they are something new. They appeared on the wave of data processing that occurred in the middle of this century and were an innovation in the field of legal institutions existing before that time. It is necessary to recognize this. None of our conventional and legal experience could tell us what computer programs were.

Programs are not like music, as some people claim. One main difference which proves this lies in the fact that programs are acquired conceptually--that is, someone who grants use of a program is not transferring merely a copy or a physical medium containing a copy. He is transferring the program. So if the

physical medium is damaged and lost, one can, at the cost of a new recording and related expenses, receive a new copy [sentence not clear in original]. This does not happen when we break a phonograph record containing music.

A computer program is not merely written, as many people say. It is written, digitized into a machine, recorded on a physical medium, read by a machine, compiled, checked, tested, and produced, all through the use of human brains and computer resources, just as is true of the hardware itself, supplies in general, and suitable premises for processing.

When it was written, our Law No 5,988/73 was not broad enough to cover and protect computer programs (although that does not prevent Brazil from adapting its copyright law to include protection of software if commercial or political needs call for it), and so far, regrettably, our legal world does not allow for the existence of data processing, much less its most notable component, which is software.

Programs are a strategic economic input, a factor for development, and an increasingly extensive consumer item, since programs provide the solution to every kind of problem from the production of programs to payrolls and the accounting for any firm, access to the information recorded in data banks, the defense systems of various countries, special systems, and artificial intelligence systems, along with an infinite number of others.

Programs are the "soul" of a computer and determine how well or how badly it is going to perform. Programs are the center of everyone's attention--programs and the Brazilian software market, which needs to be as well protected as possible to ensure the expansion of domestic software producers. That sums up the latest negotiations between Brazil and the United States, which is unable to disguise the real interests of its Department of Commerce.

It is not very easy to understand all the important aspects of data processing, and all its aspects are important to the development of human communities beginning with this decade.

Our politicians, jurists, journalists, businessmen, and citizens in general urgently need to provide themselves with massive doses of knowledge concerning the subject (ahead of time) in order to debate it or criticize the measures adopted on the subject to date--realizing that all of that is only the beginning. Much more is to come.

From toys to household electrical appliances, from bank automation to the transfer of funds, in trade, schools, industry, medicine, automobiles, aircraft and vehicles in general, household items, and anything else we can imagine that surrounds and affects the life of each of us, data processing is making its presence felt in an overwhelming and uncontrollable crescendo. Brazil cannot open its doors and permit more developed peoples (who already possess secrets we have not yet mastered) to take charge of these vital matters from the start. Instead, we need the secrets they know and even, in the future, their own markets.

Our attitude must be cautious and firm. There is no doubt that we have ways of ironing out disagreements: although we lack capital and technology, we have human talent, raw materials, and a vast territory where everything is possible if we stick to it.

We must build our own path in the area of data processing, one consistent with our resources and our shortcomings. If the results of our policy are still not out of the red, the reason is that we need to put forth an even greater effort to make the measures and plans already established in the laws and regulations we have just formulated a reality. We also need to adopt a slightly more practical view of things, something that is difficult because of our origins.

There is no way to avoid mistakes along the complicated, controversial, agitated, and long road ahead. But it can be said that the plans and foundations have been laid--now it is necessary to "run to catch up" calmly and perseveringly by starting construction of the most important building in our history. Perhaps constantly criticizing the performance of the workmen, foremen, and engineers responsible, but able to wait long enough to see the results--a kind of vote of confidence accompanied by effective pressure that needs to be constantly maintained so that that which is still wrong will be corrected and things will not slide in the adversary's direction.

11798
CSO: 3699/26

CNIE'S NEW CHAIRMAN ON GOALS, NEW TECHNOLOGIES APPLICATION

Buenos Aires LA RAZON in Spanish 7 Jan 87 p 28

[Article by Roberto Carozzo]

[Text] On 5 December 1986 the new chairman of the CNIE [National Commission for Space Research], Dr (Commodore) Arnoldo Valenzuela, took office. Dr Valenzuela, who has a doctorate in physics, spent the 15 years prior to his current appointment at the Max Planck Institute in Garching (near Munich, West Germany), working on physics of outer space.

In a press conference to which LA RAZON was invited, Dr Valenzuela said that the reason why he had accepted the chairmanship of the CNIE "is that I am determined to bring my Argentina into the space age, by introducing top international-quality advanced technologies, thinking primarily of the benefits this will bring to all the people living on our nation's soil."

Dr Valenzuela, who obtained top ratings for his skill as a military pilot and the highest order of merit for his academic work, spent 2 years studying aeronautical engineering at the Superior Aerotechnical School, maintaining an extremely high GPA there. He then continued his studies at the renowned Dr Balseiro Physics Institute (National University of Cuyo), from which he graduated with a bachelor's degree in 1966. His doctoral dissertation, in 1970, the following year won him an offer of continuing his scientific research as a fellow at the Max Planck Institute.

Since that time he has directed ten scientific projects which he originated, which led to multinational experiments and space programs, including the binational EGANI [German-Argentine Ionized Clouds Experiments]. This marked the beginning of a cooperation agreement in space between the two nations. He is now serving as scientific director of multinational space projects at the Max Planck Institute.

"The application of space technologies is vital for human life," Valenzuela said at the start of his informal talk, which the interest of the journalists present transformed into an indepth press conference, for in these applications lies the future of the technological nation that President Alfonsin has called for and is working to promote.

Some of the direct applications of space technolgoies which he mentioned are: shock waves that destroy kidney stones and gallstones; new metal alloys used in the rails of Munich's subways that absorb vibrations (eliminating the typical screeching noise at curves); the production of very high quality spheres for bearings in zero gravity environments; the use of sensors to monitor the water level in rivers and dams (to prevent floods); the use of sensors on livestock to show if the animal is in its mating season or if it has already mated; magnetometers used in Mars space exploration vehicles are now being used to monitor the movements of livestock in fields--with these sensors, the cattle can be located anywhere on the ranch.

"This is how I want the nation to move forward," said Valenzuela after listing some of the current applications of experiments conducted in space. "Technology, science, and research must move forward, providing direct applications for fundamental needs of our nation."

In relation to Argentina's needs in that area, he said that recent statistics show what is essential for moving ahead in technology and research. He said that Argentina should apply the method used by the Japanese. "At one time Japan invested less in research and development, in order to take technologies from outside, while it was revising all its objectives and plans. Then at a specific point in time, it committed itself to science and research, not focussing on topics of present interest, but on its needs for the decades to come. I believe we should apply this method."

"Argentina's capacity is good, and there are even top-quality people here," he said. He then indicated that this capacity sometimes resembles "what I might call, in mathematical terms, singular functions: individuals. We need to work more in teams. And apart from that, we need to define exactly our objectives for the 1990s, which should be years of continuity-organization-system."

He spoke of the Apollo Program, which brought the United States into the space age, with the support of all its people; he said that is what we need: "projects that are really recognized as Argentine by all the Argentine people." Disregarding one segment of this trilogy is what produced the Challenger disaster, in his opinion: "The lack of continuity in organization and systems is what led to this disaster. The technical problems were known, and warnings had been issued. However, what happened occurred because of failures in the decision-making sequence."

Advocating triennial qualification review systems for both individuals and research groups, as is done in Germany, he said that high-level work and scientific advances "will be constantly used with the support and cooperation of government, private, and university organizations, as well as of international and foreign organizations." The international qualification reviews of the research done in Argentina will lead to foreign support so that this

research may continue, said Valenzuela. "The results will drive out of the system people who are not very good. There are too many people working in research in Argentina," he concluded.

He believes Argentina is a nation "able to handle satellites"; that is, it is capable of building satellites. He said he is familiar with the SAC-1 [Argentine Scientific Satellite Project) which was recently supported at NASA. "I think this should continue, but I do want to take another look at it. We should go to the intermediate research data, which is what the more advanced countries do not produce, with their big structures and large amounts of capital. These intermediate data will help to bring our people to the highest levels, enabling us to join in international programs and receive support--support and a need for others to use our data."

Argentina's latest date for putting the SAC-1 in orbit is the start of 1993, "for it we don't do it then, we will not be able to join in the International Solar Maximum Program." On the subject of the rocket or the national manufacturing sector needed to put this satellite in a low orbit, he maintained that its construction "is a political decision that the national executive should make, one which will really bring our country into the space age." For this project, Argentina might get some support from Brazil, as Brazil invests huge amounts of money in its space organizations.

He also called for the construction of natural resources satellites and the earth-synchronous communications satellite that has been the subject of endless, and fruitless, discussions for months. He felt that this satellite "is appropriate for the infrastructure of a communications system of an industrialized nation. So it is appropriate for us."

Dr Valenzuela then concluded his talk, and speaking separately with LA RAZON, said that if his plans have not been accepted within a period of 6 to 12 months, he would resign his position as chairman of the CNIE.

7679
CSO: 3699/50

END